DUBLIN INSTITUTE FOR ADVANCED STUDIES

Institiúid Ard-Léinn Bhaile Átha Cliath

Annual Report 2006 Tuairisc Bhliantúil

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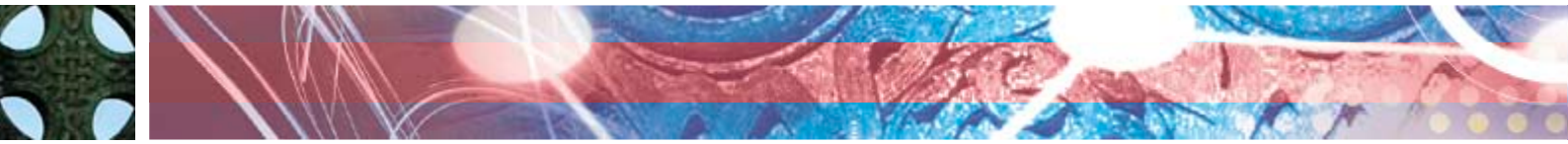


Looking back over 2006 it is clear that this has been a year of collaborative achievements made possible by the dedication and commitment of everyone associated with the Institute. The strategy statement published in 2002 and planned to guide us to the year 2006 was assessed in order to satisfy us that it had achieved its goal and to identify if the Institute's original mission took account of the guidelines laid down in the programme for prosperity and fairness. The priorities listed in the strategy statement (2002-2006) were systematically achieved with one exception which was to find accommodation to house the whole Institute under one roof and close to the Universities. In view of the unprecedented explosion in the property market, perhaps our failure to achieve this priority was not surprising but disappointing.

An integral part of the research activities of the Institute for Advanced Studies is to conduct fundamental research in specialised areas of advanced scholarship and in addition to provide training for scholars in advanced research; to achieve publication in both print and electronic form resulting from this research and to provide other support services for selected postgraduate scholars. Without doubt it is advantageous for the blossoming of ideas that scholars from different disciplines and from different nations should be helped and accommodated to intermingle. It is for this very reason the Council of the Institute is committed to achieving the goal of housing the three Schools of the Institute in one building. In order to accommodate our ever expanding numbers of researchers the Institute has been given, on a temporary basis, an additional building in Fitzwilliam Place but this arrangement has unfortunately led to a further fragmentation of one of the Schools.

Ag breathnú siar ar 2006 is léir gur bliain ghnóthachtála i gcomhoibriú a bhí innti de bharr dhíograise agus thiomantais gach éinne a bhain leis an Institiúid. Rinneadh measúnú ar an ráiteas straitéise, a foilsíodh i 2002 lenár stiúradh go dtí 2006, chun muid a shásamh gur bhain sé a sprioc amach, agus chun a fháil amach ar chuir misean bunúsach na hInstitiúide san áireamh na treoirlínte a leagadh síos sa chlár um rathúnas agus cothroime. Baineadh amach na tosaíochtaí go léir atá liostáilte sa ráiteas straitéise (2002-2006) le heisceacht amháin, .i. cóiríocht oifige a aimsiú don Institiúid ar fad i lárionad amháin gar do na hollscoileanna. I gcomhthéacs thobleathnú an mhargaidh réadmhaoine, b'fhéidir gur díomách seachas iontach ár dteip an sprioc seo a bhaint amach.

Cuid riachtanach de ghníomhaíochtaí taighde na hInstitiúide Ard-Léinn ná: buntaighde a dhéanamh i sainréimsí den ardscoláireacht, agus oiliúint a chur ar fáil do scoláirí sa saintaighde freisin; foilsiú a fháil do thorthaí an taighde seo, i bprionta agus go leictreonach; agus seirbhísí tacaíochta eile a chur ar fáil do scoláirí iarchéime roghnaithe. Gan amhras, is buntáiste do bhláth smaointe é go ndéanfaí cumascadh idir scoláirí ó dhisiplíní agus ó náisiúin éagsúla a éascú i gcóiríocht oiriúnach. Is ar an gcúis ceannann céanna seo go bhfuil Comhairle na hInstitiúide dírithe ar thrí Scoil na hInstitiúide a thabhairt le chéile in aon fhoirgneamh amháin. D'fhonn cóiríocht a chur ar fáil dár dtaighdeoirí, atá ag éirí níos líonmhaire an t-am ar fad, tá foirgneamh breise faighte go sealadach ag an Institiúid i bPlás Mhic Liam, ach ar an drochuair, roinneadh suas ceann des na Scoileanna arís de bharr an tsocraithe seo.

Presentation of Hamilton and O'Donovan Scholarships by Dr Garret Fitzgerald.

Bronnadh Scoláireachtaí Hamilton agus Uí Dhonnabháin leis an Dochtúir Gearóid Mac Gearailt.

In the latter half of 2006 the staff of the Institute commenced the preparation of a second strategic document the purpose of which is to chart a course for the Institute for the next four years. The Government has announced a significant increase in research funding in Ireland so it is perfectly justified that voices are now calling for the theory that "Science Generates Economic Strength" to be substantiated. This is a challenging situation.

Among the highlights of activities of the individual Schools, the Council has pleasure in welcoming four eminent new members to the Board of the School of Theoretical Physics, Professors Peter Knight (London), Robbert Dijkgraaf (Amsterdam), Lena Hau (Harvard) and Samson Shatashvili (Trinity College, Dublin).The School also hosted the second John Lewis lecture given by Srinavasan Varadhan from the Courant Institute in New York; as well as the Statutory Public Lecture presented by Professor Luminet (Paris) on the subject "The Shape of the Universe".

In the School of Celtic Studies a warm welcome goes to the new Senior Professor Dr. Padraig Breatnach, formerly Professor of Classical Modern Irish, University College Dublin. This year's Tionól attracted a wide audience as did the Myles Dillon lecture "Linguistic connections between India and Ireland" presented by Dr Juergen Uhlich.

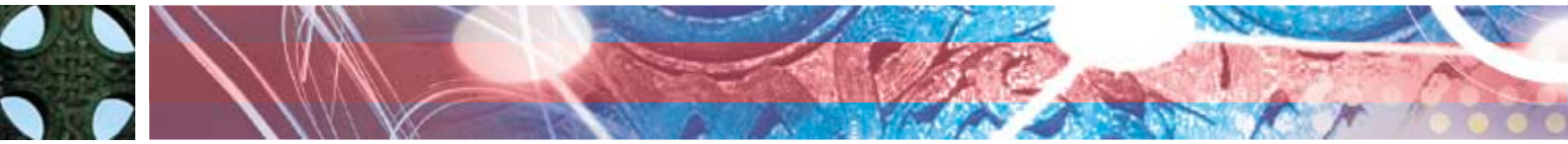
The Director of the School of Cosmic Physics, Professor Alan Jones was recognised by Canada with the award of the prestigious J.Tuzo Wilson Medal of the Canadian Geophysical Union (CGU) and Council congratulates Professor Jones. The School has to be congratulated also in their appointment of Professor Felix Aharonian from the MPI fuer Kernphysik in Heidelberg and a leading expert in high energy gamma-ray astronomy to the Professorship of Astronomy.

Sa dara leath de 2006 thosaigh foireann na hInstitiúide ag ullmhú an dara cháipéis straitéise d'fhonn cúrsa na hInstitiúide a rianú dos na ceithre bliana romhainn. Tá méadú tábhachtach i maoiniú taighde in Éirinn fógraithe ag an Rialtas agus tá sé láncheart go bhfuil guthanna anois ag éileamh go gcruthófaí an teoiric go "nGineann Eolaíocht Neart Eacnamúil". Is staid dhúshlánach í seo.

Maidir le gníomhaíochtaí shuntasacha sna Scoileanna ar leith, tá áthas ar an gComhairle ceathrar ball nua a fháiltiú ar Bhord Scoil na Fisice Teoiriciúla: na hOllúna Peter Knight (Londain), Robbert Dijkgraaf (Amsterdam), Lena Hau (Harvard) agus Samson Shatashvili (Coláiste na Tríonóide, Baile Átha Cliath). Chomh maith le sin, d'óstáil an Scoil an dara léacht John Lewis a thug Srinavasan Varadhan ón Courant Institute i Nua Eabhrac; agus thug an tOllamh Jean-Pierre Luminet, Paris, an Léacht Phoiblí Reachtúil ar "Cruth na Cruinne" ar an 2 Feabhra.

I Scoil an Léinn Cheiltigh, tá fáilte ó chroí roimh an Ollamh Sinsireach Dr Pádraig Breatnach, a bhí roimhe seo ina Ollamh le Nua-Ghaeilge Chlaisiceach, Coláiste na hOllscoile, Baile Átha Cliath. Mheall an Tionól lucht éisteachta ard i mbliana, mar a dhein an léacht Myles Dillon a thug an Dr Juergen Uhlich: "Ceangail teangeolaíochta idir Éirinn agus an India".

Fuair an tOllamh Alan Jones, Stiúrthóir Scoil na Fisice Cosmaí, aitheantas i gCeanada le bronnadh an bonn J. Tuzo Wilson d'Aontacht Geofisice Cheanada (CGU) air, agus tréaslaíonn an Chomhairle leis an Ollamh Jones. Caithfear tréaslú don Scoil freisin as duine de na saineolaithe is mó le rá i réalteolaíocht gáma-ghathanna ardfhuinnimh a cheapadh ina Ollamh le Réalteolaíocht, i., an tOllamh Felix Aharonian ón MPI fuer Kernphysik i Heidelberg.



The new Fellowship Programme is proving to be attractive to the International scholars and scientists. A Schroedinger Fellow, Christian Roemelsberger was welcomed to the School of Theoretical Physics in November whilst Fellow Dr Xavier Garcia of the School of Cosmic Physics was awarded an SFI grant. In Celtic Studies a second Bergin Fellow Dr Clodagh Downey was appointed in August.

The Council's best wishes go to Professor Máirtín Ó Murchú on his retirement as Senior Professor in Celtic Studies and a former Director of the School and member of Council. We look forward to seeing him regularly in Celtic Studies.

The Council thanks the Department of Education and Science for their continued interest in the work of the Institute.

I take this opportunity to thank the Council, the Governing Boards, the academics and scholars and pay tribute to the staff for their hard work and loyalty.

Dervilla M X Donnelly
Chairman, Council of the Institute

Is léir go bhfuil an Clár Ánra nua tarraingteach dos na scoláirí agus na heolaithe Idirnáisiúnta. Fáiltíodh roimh Ánra Schroedinger, Christian Roemelsberger, i Scoil na Fisice Teoiriciúla i mí na Samhna agus bronnadh deontas SFI ar an Ánra Dr Xavier Garcia ó Scoil na Fisice Cosmaí. I Scoil an Léinn Cheiltigh, ceapadh an dara Ánra Bergin, an Dr Clodagh Downey, i mí Lúnasa.

Tá gach dea-ghuí na Comhairle ag dul don Ollamh Sinsireach i Léinn Cheiltigh, Máirtín Ó Murchú, agus é ag dul ar scor; iar-Stiúrthóir na Scoile agus iar-chomhalta den Chomhairle is ea é. Tá súil againn é a fheiceáil go rialta istigh i Léinn Cheiltigh.

Gabhann an Chomhairle buíochas leis an Roinn Oideachais agus Eolaíochta as a suim leanúnach in obair na hInstitiúide.

Glacaim leis an deis seo chun buíochas a ghabháil leis an gComhairle, leis na Boird Rialaithe, leis na hacadóirí agus na scoláirí, agus chun ómós a thabhairt don fhoireann as a gcuid chruaoibre agus a ndílseachta.

Dervilla M X Donnelly
Cathaoirleach, Comhairle na hInstitiúide

SCHOOL OF CELTIC STUDIES
SCOIL AN LÉINN CHEILTIGH

A significant event this year was the appointment of Pádraig Breatnach, Professor of Classical Modern Irish at University College Dublin, to a Senior Professorship at the School. He took up his appointment in December. The vacancy arose due to the retirement of Professor Máirtín Ó Murchú. In addition, a second Bergin Fellow, Dr Clodagh Downey, was appointed in August, and a new librarian, Margaret Kelly, was appointed in November.

The year 2006 saw the publication of two books, *The Phonemic Analysis of Scottish Gaelic* by Elmar Ternes, and *Welsh Walter of Henley* by Alexander Falileyev. The first is of special interest to linguists. The second forms volume twelve of the Medieval and Modern Welsh Series, and will be of importance to scholars of medieval Welsh language and history, especially historians of agriculture.

The ongoing demand for our publications made it necessary to reprint a number of books this year. These were: *Táin Bó Cúailnge. Recension I*; *Táin Bó Fraích*; *A Grammar of Middle Welsh*; *The Annals of Inisfallen*.

The Irish Script on Screen (ISOS) project under the direction of Professor Pádraig Ó Macháin continued digitisation of manuscripts in the Royal Irish Academy. Work proceeded on upgrading the huge database and archive of digitised material held by ISOS.

The ISOS website is now averaging 2 million visits per annum, and 800,000 requests for pages per annum. The School's website (**www.celt.dias.ie**), managed by Professor Ó Macháin and Andrew McCarthy, continued to grow in 2006.

Is mór ag Scoil an Léinn Cheiltigh gur ceapadh Pádraig Breatnach mar Ollamh Sinsearach sa Scoil, a bhí ina ollamh le Nua-Ghaeilge Chlasaiceach i gColáiste na hOllscoile, Baile Átha Cliath roimhe seo. Thosnaigh sé ag obair san Institiúid i mí na Nollag, go gairid tar éis don Ollamh Máirtín Ó Murchú a cheapadh ina ollamh emeritus. Chomh maith leis sin ceapadh an dara Comhalta Uí Aimhirgín, an Dr Clodagh Downey, i mí Lúnasa, agus leabharlannaí nua, Margaret Kelly, i mí na Samhna.

Sa bhliain 2006 foilsíodh dhá leabhar, *The Phonemic Analysis of Scottish Gaelic* le Elmar Ternes, agus *Welsh Walter of Henley* le Alexander Falileyev. Beidh suim ar leith ag teangeolaithe sa chéad cheann. Imleabhar a dó dhéag den tsraith *Medieval and Modern Welsh Series* is ea an dara ceann, a mbainfidh scoláirí teanga agus stair na Breatnaise sa Mheánaois leas mór as, go háirithe staraithe na talamhaíochta.

Mar gheall ar an éileamh leanúnach a bhíonn ar ár gcuid foilseachán caitheadh na leabhair seo leanas a chur i gcló arís sa tréimhse seo: *Táin Bó Cúailnge. Recension I*; *Táin Bó Fraích*; *A Grammar of Middle Welsh*; *The Annals of Inisfallen*.

Lean an tionscnamh Meamram Páipéar Ríomhaire (MPR) ar aghaidh faoi stiúrú an Ollaimh Pádraig Ó Macháin le digitiú lámhscríbhinní in Acadamh Ríoga na hÉireann. Leanadh ar aghaidh le huasghrádú bunachar agus cartlann ollmhór an ábhair dhigitigh atá i dtaisce ag MPR.

Faoi láthair bíonn thart ar 2 mhilliún cuairt ar shuíomh idirlín MPR in aghaidh na bliana, agus 800,000 iarratas ar leathanaigh. Lean suíomh idirlín na Scoile (**www.celt.dias.ie**) ag fás faoi stiúrú Phádraig Uí Mhacháin agus Andrew McCarthy sa bhliain 2006.

Professor Fergus Kelly, Professor Elmar Ternes and the Director, Professor Liam Breatnach at the launch of the publication *The Phonemic Analysis of Scottish Gaelic*.

An tOllamh Fergus Kelly, An tOllamh Elmar Ternes agus and Stiúrthóir An tOllamh Liam Breatnach ag seoladh The Phonemic Analysis of Scottish Gaelic.

Current and retrospective cataloguing of the library continued and records were made available on the Online Public Access Catalogue. Acquisitions continued in subject areas relevant to the research needs of the School. Regular updates on recent accessions and current periodicals were issued and research and bibliographic queries from members of the School and from visitors were dealt with.

Professor Malachy McKenna and Dr Brian Ó Curnáin continued their work on Modern Irish dialect studies, respectively carrying out field-work in Counties Donegal and Galway. Dr Ó Curnáin also prepared his monograph on The Irish of Iorras Aithneach, County Galway, for publication.

Alexandre Guilarte continued working on the Bibliography of Irish Linguistics and Literature Project. In the area of Early Irish law Professor Liam Breatnach completed his series of seminars on the Old Irish law tract *Córus Bésgnai*, an edition of which he intends to publish in the Early Irish Law Series. Professor Fergus Kelly continued work on his edition of the thirteenth-century *Legal Treatise* by Giolla na Naomh Mac Aodhagáin, again for publication in the Early Irish Law Series.

Professor Liam Breatnach began a new series of seminars on Middle Irish verse, and Bergin Fellow Roisín McLaughlin continued a series of seminars on metrics.

This year's Tionól again attracted a very wide audience, with speakers from Ireland, England, Wales, Germany, Italy and Canada. Attendance was high, with audiences reaching ninety people. The Statutory Public Lecture held in conjunction with the Tionól, was delivered in University College Dublin by Professor Pádraig Ó Riain, under the title 'The Book of Glendalough: a continuing investigation'.

Leanadh le catalógú reatha agus aisbhreathnaitheach na leabharlainne, agus cuireadh taifid ar fáil ar an gCatalóg Rochtana Poiblí ar Líne. Leanadh ag cur le líon na bhfoilseachán i réimsí a bhaineann le hobair taighde na Scoile. Soláthraíodh nuashonraí rialta faoi nuashealbhacháin agus irisí reatha, agus déileáladh le ceisteanna taighde agus bibleagrafaíochta ó bhaill na Scoile agus ó chuairteoirí.

Lean an tOllamh Malachy McKenna agus an Dr Brian Ó Curnáin ar thaighde ar chanúintí na Nua-Ghaeilge, agus rinne siad obair pháirce i gContae Dhún na nGall agus i gContae na Gaillimhe faoi seach. D'ullmhaigh an Dr Ó Curnáin a leabhar dár teideal The Irish of Iorras Aithneach, County Galway, do na clódóirí.

Choinnigh Alexandre Guilarte air ag obair ar thionscnamh Bhibleagrafaíocht Theangeolaíocht is Litríocht na Gaeilge. Maidir le sean-dlithe na hÉireann, chríochnaigh an tOllamh Liam Breatnach a shraith seimineár ar an dtéacs dlí Sean-Ghaeilge *Córus Bésgnai*, téacs a bhfuil sé i gceist aige eagrán de a fhoilsiú san *Early Irish Law Series*. Choinnigh an tOllamh Fergus Kelly air ag obair ar eagrán den Tráchtas Dlí de chuid Giolla na Naomh Mhic Aodhagáin, a bhaineann leis an 13ú haois; arís is san Early Irish Law Series atá sé seo le foilsiú.

Thosnaigh an tOllamh Liam Breatnach ar shraith nua seimineár ar dhánta Meán-Ghaeilge, agus lean Roisín McLaughlin, Comhalta Uí Aimhirgín, lena sraith seimineár ar chúrsaí meadarachta.

Tharraing Tionól na bliana seo lucht éisteachta fairsing, le cainteoirí as Éirinn, Sasana, an Bhreatain Bheag, an Ghearmáin, an Iodáil agus Ceanada. Bhí líon maith daoine i láthair; suas le nócha duine i seisiúin áirithe. Tugadh an Léacht Reachtúil in éineacht leis an dTionól i gColáiste na hOllscoile, Baile Átha Cliath, nuair a labhair an tOllamh Pádraig Ó Riain faoin teideal 'The Book of Glendalough: a continuing investigation'.

Professor Dervilla Donnelly and Dr. Garrett Fitzgerald attending the Myles Dillon Memorial Lecture.

An tOllamh Dervilla Donnelly agus an Dr. Garrett Fitzgerald ag Léacht Chuimhneacháin Mhaolmhuire Díolúin.

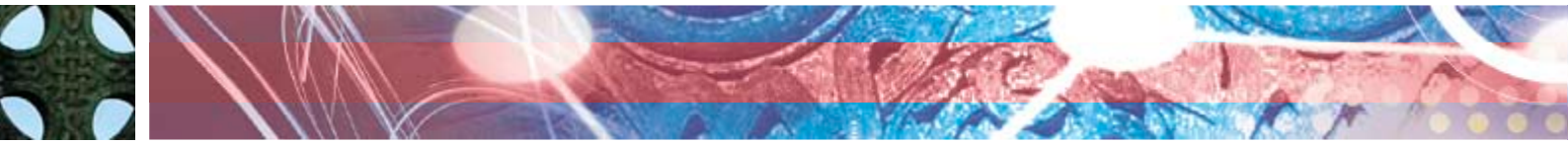
In addition the School organised and hosted a lecture in memory of Professor Myles Dillon, a former director of the School, on 'Linguistic Connections between India and Ireland' given by Dr Jürgen Uhlich of TCD on 6 April. This was a very successful occasion with the audience estimated at around 130 people.

In conjunction with the ISOS project the School organised and hosted a seminar given by Dr Peter Robinson of the Institute for Textual Scholarship and Electronic Editing, University of Birmingham, on 7 October. The seminar discussed the subject of electronic editions of texts, and the future of mass digitisation. The attendance, which numbered sixty, was drawn mainly from the scholarly and archival communities.

Ar an 6ú Aibreán d'eagraigh an Scoil léacht chuimhneacháin Mhaolmhuire Díolúin, iar-Stiúrthóir ar an Scoil, a thug an Dr Jürgen Uhlich as Coláiste na Tríonóide faoin teideal 'Linguistic Connections between India and Ireland'. D'éirigh go hiontach leis an ócáid seo, agus bhí thart ar 130 duine i láthair.

Ócáid eile i mbliana ab ea eagrú agus óstaíocht sheimineáir a thug an Dr Peter Robinson ón Institute for Textual Scholarship and Electronic Editing, Ollscoil Birmingham, ar an 7ú Deireadh Fómhair, in éineacht le tionscnamh MPR. Séard a bhí mar ábhar ann eagráin leictreonacha de théacsanna agus a bhfuil i ndán don mholldhigitiú. Thart ar 60 duine a bhí sa lucht éisteachta, scoláirí agus cartlannaithe an chuid is mó acu.

SCHOOL OF COSMIC PHYSICS
SCOIL NA FISICE COSMAÍ



Director's Report

The School continued to be successful in expanding in numbers and activities through 2006, particularly with the hiring of an eminent scientist in the Astronomy and Astrophysics Section, but unfortunately delays with accessing promised new space at 31 Fitzwilliam Place meant that progress was limited on certain initiatives. One of those initiatives was the collocation of the sub-Sections of Astronomy and Astrophysics into one location, recommended by the 2004 School Review Committee and accepted by the Governing Board. A major concern expressed by the Review Committee was the isolation of the Dunsink students, and this was addressed by having the three students move into Merrion Square in March. Full collocation of the two components of the Section will occur in Spring, 2007 in Fitzwilliam Place.

One issue that plagued the Institute for over fourteen months, which directly affected the School, was obtaining sanction from the Department of Education and Science to bring on staff young scientists who had been successful in obtaining prestigious Irish Research Council for Science, Engineering and Technology (IRCSET) Post-doctoral Fellowships. Dr. Celine Ravaut was awarded an IRCSET Fellowship in August 2005, but sanction was not forthcoming until October 2006, by which time Dr. Ravaut had accepted a position in Norway. Particularly the HADES research will suffer because of this, but generally Dr. Ravaut's expertise in seismic data inversion will be sorely missed.

Professor Jones received a significant honour in 2006, namely receiving the J. Tuzo Wilson medal of the Canadian Geophysical Union (CGU). This medal is the top award of the CGU, and is given annually to recognize scientists who make outstanding contributions to Canadian geophysics. Tuzo Wilson, one of the "fathers" of continental drift, with significant papers in the 1960s, was the first recipient of the award in 1978. Jones is the first recipient of the award not resident in Canada.

Tuairisc an Stiúrthóra

Leanadh leis an mborradh faoin Scoil i rith 2006 maidir le forbairt foirne agus gníomhaíochtaí, go háirithe le hearcú eolaí oirirc i Rannóg na Réalteolaíochta agus Réaltfhisice, ach is é an trua é go raibh an dul chun cinn srianta i dtionscnaimh áirithe de bharr na moilleanna ar fháil isteach i spásanna nua a bhí geallta dúinn i 31 Plás Mhic Liam. Ceann de na tionscnaimh sin ab ea an dá fho-Rannóg, Réalteolaíocht agus Réaltfhisic, a thabhairt le chéile sa suíomh céanna, mar a mhol Coiste Athbhreithnithe na Scoile 2004, moladh ar ghlac Bord na Gobharnóirí leis. Dúirt an Coiste Athbhreithnithe gur chúis mhór imní é go raibh mic léinn leo féin i nDúin Since agus dá réir bogadh an triúr isteach i gCearnóg Mhuirfean i mí an Mhárta. Tiocfaidh an dá chuid den Rannóg le chéile i bPlás Mhic Liam in Earrach 2007.

Fadhb a chuir as go mór don Institiúid thar thréimhse cheithe mhí dhéag a raibh tionchar aici ar an Scoil ab ea cead a fháil ón Roinn Oideachais agus Eolaiochta óga ar éirigh leo Comhaltacht Iar-Dhochtúra cháiliúil IRCSET a bhaint amach, a thógáil isteach. Bronnadh Comhaltacht IRCSET ar an Dr. Celine Ravaut i mí Lúnasa 2005, ach níor tháinig an cead go dtí mí Dheireadh Fomhair 2006, nuair a bhí sí tar éis post a ghlacadh san Iorua. Dá bharr seo, cuirfear as go mór don taighde HADES ach go háirithe, ach go ginearálta, aireofar uainn go mór saineolas an Dr Ravaut maidir le hinbhéartú sonraí seismeacha.

Fuair an tOllamh Jones onóir thábhachtach i 2006, .i. bonn J. Tuzo Wilson d'Aontacht Geofisice Cheanada (CGU). Is é sárghradam an CGU é an bonn seo, a bhronntar gach bliain in aitheantas d'eolaithe a chabhraíonn go suntasach leis an nGeofisic i gCeanada. Bronnadh den chéad uair é i 1978, ar Tuzo Wilson, duine "d'aithreacha" theoiric na gluaiseachta ilchríochaí. Is é Jones an chéad fhaighteoir nach bhfuil cónaí air i gCeanada.

Geophysics Section activities

The Geophysics Section saw some major achievements and advances in 2006, but also unfortunately some setbacks with regard to personnel. The Geophysics Section continued in its quest to fill the position of Mallet Professor of Seismology, named after Irishman Robert Mallet, the famous father of controlled-source seismology. A new vigorous 2006 search took place, with interviews of the short-listed candidates in November, but offers of the position were not taken up by acceptable candidates.

On a general research front, the TOPO-Europe initiative was successful at becoming a European Science Foundation (ESF) EUROCORES proposal, and was the top-rated of all initiatives discussed at the ESF's November 2006 Brussels meeting. TOPO-Europe is a project to link together crustal and mantle tectonic processes in the Earth's subsurface with long term surface processes, such as denudation, in a European-wide perspective through focused studies on selected natural laboratories. TOPO-Europe is the largest ever geoscience project launched in Europe, and has already attracted funding commitments in excess of €10M, and potentially more than double that. The School is involved through the activities of Professor Jones in efforts to launch EuroArray, a comparable project to USArray, and the integration of EuroArray and TOPO-Europe.

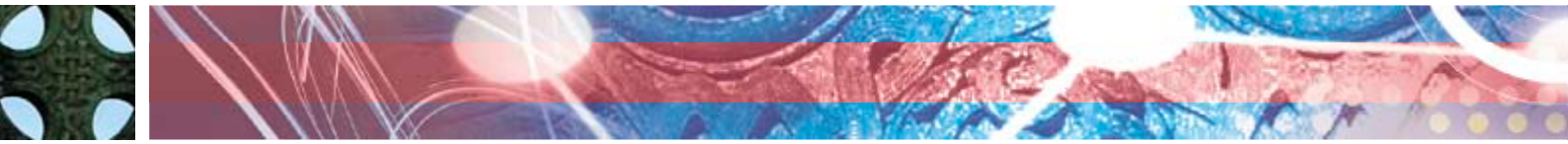
Efforts to raise funding for AfricaArray continued, particularly to sponsor a seismic station in Zambia, but were again unsuccessful. AfricaArray is a unique programme for geophysical research and education in sub-Saharan Africa. The School is currently contributing through providing technical support of instructors for the Geophysical Field School organized by the University of the Witwatersrand under the auspices of AfricaArray.

Gníomhaíochtaí na Rannóige Geofisice

Bhí roinnt móréachtaí agus dul chun tosaigh sa Rannóg i 2006 ach, ar an drochuair, bhí méid áirithe dul ar gcúl i gcúrsaí foirne freisin. Lean Rannóg na Geofisice lena n-iarrachtaí chun post Ollamh le Seismeolaíocht Mallet a líonadh, post a ainmníodh in onóir don Éireannach Robert Mallet, athair clúiteach na seismeolaíochta d'fhoinse smachtaithe. Rinneadh cuardach úr bríomhar i 2006 agus cuireadh agallaimh ar ghearrliosta de na hiarrthóirí i mí na Samhna, ach níor ghlac na hiarrthóirí inghlactha lena gcuid tairiscintí don phost.

Ag leibhéal ginearálta taighde, glacadh leis an dtionscnamh TOPO-Europe mar thairiscint EUROCORES de chuid Fondúireachta Eolaíochta na hEorpa (ESF), agus rug sé an chraobh leis i measc na dtionscnamh a pléadh ag cruinniú na Samhna an ESF sa Bhruiséal. Tionscnamh is ea TOPO-Europe chun próisis teicteonacha screimhe agus maintlín i bhfodhromchla na Cruinne a cheangal le próisis fhadthéarmacha dhromchlaí, lomairt mar shampla, i bpeirspeictíocht mhór-Eorpach, le staidéir dírithe ar shaotharlanna nádúrtha roghnaithe. Is é TOPO-Europe an tionscnamh geo-eolaíochta is mó atá curtha sa siúl san Eoraip agus ciste os cionn €10M geallta leis cheana féin, suim a d'fhéadfaí a dhúbailt nó níos mó amach anseo. Trí ghníomhaíochtaí an Ollaimh Jones, tá an Scoil rannpháirteach in iarrachtaí chun EuroArray, atá cosúil leis an tionscnamh USArray, a chur sa siúl, agus i gcomhtháthú EuroArray agus TOPO-Europe.

Leanadh le hiarrachtaí chun maoiniú a lorg do AfricaArray, le haghaidh stáisiúin sheismigh i Zambia ach go háirithe, ach arís, níor éirigh leis na hiarrachtaí. Clár uathúil le haghaidh taighde geo-eolaíochta agus oideachais san Aifric fho-Shahárach is ea AfricaArray. Tugann an Scoil cúnamh faoi láthair le tacaíocht theicniúil do theagascóirí don Scoil Geoifisiceach Páirce atá eagraithe ag Ollscoil Witwatersrand faoi choimirce AfricaArray.



Advances in combining seismological and electromagnetic data continued with the work of Ph.D. candidate Max Moorkamp and Professor Alan Jones on the joint inversion of seismic receiver function (RF) data and magnetotelluric (MT) data for one-dimensional Earth structure, and the work of Ph.D. candidate Mark Hamilton and Jones on comparing and contrasting seismic and electrical anisotropy. RF+MT inversions using data from Ireland had somewhat limited success, possibly due to the poorer quality data, both seismological and electromagnetic, and/or due to more complex Earth structure. However, RF+MT inversions using data from Canada, specifically from the centre of the Archean Slave craton in north-western Canada, showed highly promising results with superior resolution of enigmatic layers within the uppermost mantle of the craton. Comparisons of seismic and electrical anisotropy lead to conclusions about the nature of grain alignment in the uppermost mantle, and a first result was published during 2006 in an international journal.

The group working in the Southern African Magnetotelluric Experiment (SAMTEX) consortium grew with Dr. Mark Muller taking the position of Science Foundation Ireland funded Post-doctoral Fellow. A scientific highlight for 2006 was the highly-successful 2006 field campaign, led by Dr. Muller and Ph.D. candidate Marion Miensopust, which resulted in excellent magnetotelluric data being acquired at over one hundred locations in northern Botswana and northern Namibia, without any injuries to personnel or any instrumental loss or damage. The non-scientific highlight of the year was the decision by BHP-Billiton to become a SAMTEX consortium member, which brings in further funding for the project and facilities a Phase IV of acquisition, planned for early 2008.

Lean an dul chun cinn maidir le chuingriú sonraí sheismeacha agus leictreamaighnéadacha le hobair an iarrthóra Ph.D. Max Moorkamp agus an Ollaimh Alan Jones ar chomh-aisiompú shonraí ar fheidhm ghlacadóirí sheismeacha (RF) agus shonraí maighnéadaiteallúireacha (MT) le haghaidh struchtúr aontoiseach an domhain, agus obair an iarrthóra Ph.D. Mark Hamilton agus Jones ag déanamh comparáide agus contrárthachtaí idir ainiseatrópacht sheismeach agus ainiseatrópacht leictreach. Bhí sonraí aisiompuithe RF+MT na hÉireann teoranta go maith toisc, b'fhéidir, na sonraí seismeacha agus na sonraí leictreamaighnéadacha a bheith níos boichte agus/nó toisc struchtúr na Talún a bheith níos coimpléacsaí. Ach bhí torthaí an-dóchúil ann faoi na haisiompuithe RF+MT a bhain úsáid as sonraí ó Cheanada, ó lár chratóin an Archean Slave in iarthuaisceart Cheanada ach go háirithe, le hardghléiní scaireanna dúrúnda sa mhaintlín is uachtaraí den chratóin. As ainiseatrópacht sheismeach agus leictreach a chur i gcomórtas, leanann conclúidí faoin gcineál ailíniú gráinní sa mhaintlín is uachtaraí agus foilsíodh an chéad toradh in iris idirnáisiúnta i 2006.

Méadaíodh an grúpa ag obair le cuibhreannas Turgnamh Maighnéadaiteallúireach na hAfraice Theas (SAMTEX), leis an Dr. Mark Muller ag glacadh post Ánra Iar-dhochtúra a mhaoinigh Fondúireacht Eolaíochta Éireann. Ceann de bhuacán eolaíochta 2006 ab ea an feachtas an-éiritheach allamuigh faoi stiúr an Dr. Muller agus iarrthóir Ph.D. Marion Miensopust, a bhailigh sonraí maighnéadaiteallúireacha ar fheabhas ag breis is céad suíomh i dtuaisceart na Botsuáine agus i dtuaisceart na Namaibe, gan dochar dá laghad a bheith déanta do dhuine ar bith ná damáiste nó ligint amú i gcás gléas ar bith. Buacán neamheolaíochta na bliana ab ea cinneadh BHP-Billiton teacht isteach mar bhall de chuibreannas SAMTEX, rud a chiallaíonn achmhainní breise don tionscnamh, agus rud a éascaíonn facilitates? Céim IV den chlár fála, atá beartaithe do luath i 2008.

German Ambassador, His Excellency Christian Pauls with Chairman Dervilla Donnelly and Professor Alan Jones at the presentation of Hamilton and O'Donovan Scholarships.

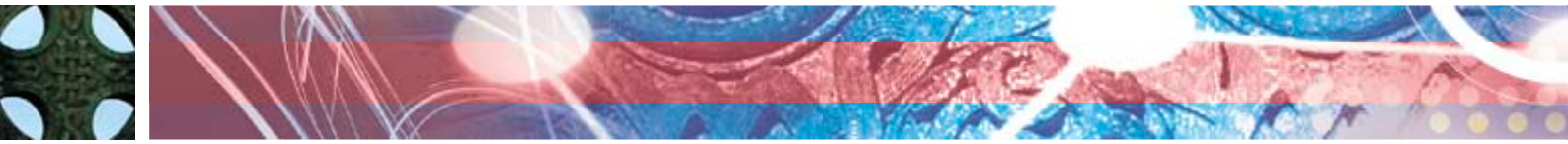
Ambasadóir Gearmánach, A Shoilse Christian Pauls leis an gCathaoirleach Dervilla Donnelly agus an tOllamh Alan Jones ag bronnadh scoláireachtaí Hamilton agus Uí Dhonnabháin.

Schrödinger Fellow Dr. Xavier Garcia was successful in 2006 in raising funds for two marine electromagnetism projects. One of these was funded under the Petroleum Infrastructure Program (PIP), and was carried out in July in the Malin Sea area. The objectives of the survey were to provide acoustic and electromagnetic data from the Malin Sea for geohazard related studies in a pockmark field, and these were met with high success. The second project was funded by Science Foundation Ireland, and this project will map Galway Bay in an unprecedented way acquiring EM, bathymetry and seismic data, and also collect grab samples, gravity and piston cores, vibrocores and also water samples. The goals of this survey are twofold: map the bay to study its glacial history and also map channels responsible for groundwater discharges, an event that can pose serious environmental problems. The survey will take place in 2008.

Numerical simulation of the Earth's three-dimensional electrical resistivity structure continued through the CosmoGrid funded support to Research Fellow Dr. Dmitry Avdeev and Ph.D. candidate Anna Avdeeva. The work is focussed on determining the 3-D structure from surface observations, the so-called "inversion" problem. Advances were made in making the code run on many computers simultaneously, and an acceleration of 7 times was achieved with 16 processors. Dr. Avdeev concluded his Fellowship and returned to his home institution in Moscow, but is a frequent visitor to the School.

D'éirigh leis an Ánra Schrödinger Dr. Xavier Garcia i 2006 airgeadú a fháil le haghaidh dhá thionscadail leictreamaighnéadacha. Maoiníodh ceann acu faoin gClár um Infrastruchtúr Peitriliam (PIP) agus cuireadh i gcrích é i mí Iúil i limistéar Mhuir Mhálanna. Ba iad cuspóirí an staidéir ná sonraí fuaime agus leictreamaighnéadacha as Muir Mhálanna a chur ar fáil le haghaidh staidéir gaolmhar leis an ngeoghuais i réimse crosach, agus d'éirigh go han-mhaith leo. Mhaoinigh Fondúireacht Eolaíochta Éireann an dara ceann, tionscadal a dhéanfaidh Bá na Gaillimhe a léirscáiliú ar bhealach nach ndearnadh go dtí seo, ag gnóthú sonraí EM, sonraí bataiméadrachta agus sonraí seismeach, agus ag bailiú greimsamplaí, croíanna domhantarraingthe agus loine, croíthe ar crith agus samplaí uisce. Tá dhá chuspóir ag an suirbhé seo: an cuan a léarscáiliú chun a stair oighreach a scrúdú, agus léarscáiliú freisin ar na cainéil atá freagrach as doirteadh screamhuisce, cás gur féidir fadhbanna chinniúnacha chomhshaoil a ardú. Déanfar an suirbhé in 2008.

Leanadh le hinsamhladh uimhriúil ar struchtúir friotachais leictrigh tríthoisigh na cruinne le hairgead CosmoGrid don Ánra Taighde Dr. Dmitry Avdeev agus don iarrthóir Ph.D. Anna Avdeeva. Díríonn an taighde ar dhearbhú an struchtúir thríthoisigh ó bhreathnaithe dromchla, an fhadb "aisiompaithe", mar a thugtar air. Bhí dul chun cinn maidir leis an cód a rith ar mhórán ríomhairí ag an am céanna agus baineadh amach luathú faoina 7 le 16 phróiseálaithe. Chuir an Dr. Avdeev críoch lena hÁnracht agus d'imigh ar ais go dtí a shean-institiúid i Moscow, ach is cuairteoir é a thagann go minic go dtí an Scoil fós.



The ISLE and ISLE-MT projects, for seismological and magnetotelluric studies of the Iapetus suture which closed the Iapetus ocean that separated northern Ireland from southern Ireland, are concluding. The ISLE-MT work has identified, for the first time, the detailed crustal-scale geometry of the suture. The first paper was submitted and accepted for publication in 2006, but unfortunately the time of Post-doctoral Fellow Dr. C.K. Rao concluded and he returned to his home institution in Mumbai, India. For ISLE the rather surprising interpretation is of identification, for the first time, of significant anisotropy deep in the mantle. The first paper was accepted for publication, and Ph.D. candidate Chuong Van Do submitted his thesis for examination.

The major effort of the seismological side of the Geophysics Section was in the HADES project, which is studying the crustal structure below the Hatton Bank of offshore Ireland below the Atlantic Ocean. New high-resolution crustal models have been developed for the Hatton Bank that show, amongst other features, that extension of the crustal rocks was less than for the Rockall Trough. Unfortunately, the HADES group at DIAS was diminished through 2006 with both Post-doctoral Fellows, Laurent Gernigon and Celine Ravaut, leaving, despite both successfully being awarded IRCSET grants. Ph.D. candidate Anne Chabert is continuing to collaborate with Ravaut through visits to Norway.

Continued work on data from the Porcupine Basin, off Ireland's SW coast has confirmed that the crust is extremely thin in the northern part of the basin. Also, the seismic velocities in the uppermost mantle are anomalously slow. A paper was published on this work in the Journal of the Geological Society of London by Professors Brian O'Reilly and Peter Readman and Dr. Franz Hauser.

Tá na tionscadail ISLE agus ISLE-MT le haghaidh staidéar seismeach maighnéadaiteallúireach ar an uaim Iaipéitis, a dhún an tAigéan Iaipéitis idir thuaisceart agus deisceart na hÉireann, ag druidim chun deiridh. D'aithin obair ISLE-MT, den chéad uair, mionchéimseata screamhscálach an uama. Cuireadh an chéad pháipéar isteach lena fhoilsiú agus glacadh leis i 2006, ach ar an drochuair, bhí tréimhse an Ánra Iar-dhochtúra Dr C.K. Rao thart agus d'fhill sé ar a shean-institiúid i Mumbai, An India. I gcás ISLE, ba é an léirmhíniú ba shuntasaí ná ainiseatrópacht thábhachtach a aithint, den chéad uair, go domhain sa mhaintlín. Glacadh leis an gcéad pháipéar lena fhoilsiú agus chuir iarrthóir Ph.D. Chuong Van Do a thráchtas faoi bhráid na scrúdaitheoirí.

Bhí príomhiarracht thaobh seismeach na Rannóige Geofisice i dtionscadal HADES, a scrúdaíonn an screamhstruchtúr faoi Bhruach Hatton amach ó chósta na hÉireann faoin Aigéan Atlantach. Forbraíodh screamhshamhlacha ardtaifigh nua do Bhruach Hatton a léiríonn, i measc tréithe eile, go raibh fairsingiú níos lú ar na screamhcharraigeacha ná mar a bhí in Umar Rocal. Ar an drochuair, laghdaíodh grúpa HADES san DIAS i rith 2006 nuair a d'fhág an bheirt Ánra Iar-dhochtúra, Laurent Gernigon agus Celine Ravaut, in ainneoin deontaisí IRCSET a bheith bronnta orthu. Leanann iarrthóir Ph.D. Anne Chabert ag comhoibriú le Ravaut trí chuairteanna ar an Iorua.

Dhearbhaigh obair leanúnach ar shonraí ó Imchuach an Torcáin, siar ó dheas amach ó chósta na hÉireann, go bhfuil an screamh an-tanaí sa chuid thuaisceartach den imchuach. Freisin, tá na treoluasanna seismeacha sa mhaintlín is uachtaraí go haimhrialta mall. Foilsíodh páipéar faoin obair seo leis na hOllúna Brian O'Reilly agus Peter Readman agus an Dr. Franz Hauser in iris cháiliúil Chumann Geolaíodh Londain.

The DIAS short period seismic network continued to record local and global events, and the Section maintained the Dublin station of the GEOFON German global seismic network. All earthquake parameter data recorded is shared internationally with our seismological partners through the International Seismological Commission (ISC) and with our European partners at The European and Mediterranean Seismological Centre (EMSC). Efforts to upgrade the network to a fully modern real-time network continued through the Government's tsunami warning initiative.

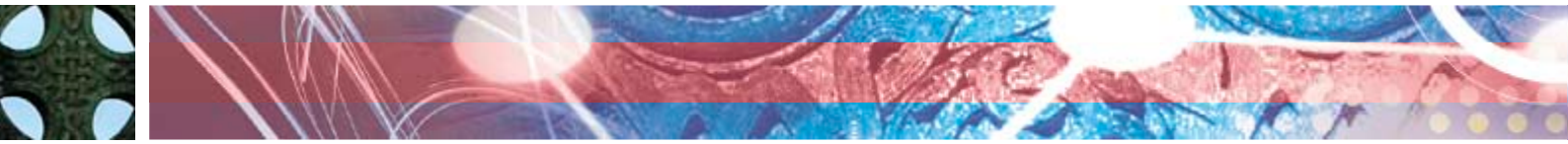
Geodynamic modelling of basin extension continued through the work of Post-doctoral Fellow Dr. Tadashi Yamasaki, funded by CosmoGrid, and Ph.D. candidate John Sheehan. Further examination of grain-size-related rheological weak zones as a possible controlling influence on the mode of lithospheric extension occurred, and a paper describing some of this work was completed and published during the year. The computer code was parallelized by John Sheehan for running on the CosmoGrid clusters, but the increase in computational speed by about a factor of 2-3 was somewhat disappointing. Collaboration was established with the Analogue and Computational Modelling Groups led by Professor Sierd Cloetingh and Dr. Dimitrios Sokoutis of the Vrije University in Amsterdam, with both Yamasaki and Sheehan spending time in those groups.

Finally, the Section is involved in the PICASSO project, for Program to Investigate the Cause of the Alboran-AtlaS System convective Overturn, which is an international, multi-disciplinary project to study the complex tectonics of the Africa-Europe collision in the western Mediterranean, with attendant east-west extension and possible subduction or delamination beneath the Alboran Sea, east of Gibraltar.

Lean líonra seismeach gearrthréimhseach an DIAS ag taifeadadh teagmhais áitiúla agus domhanda agus chothaigh an Rannóg stáisiún Bhaile Átha Cliath den líonra domhanda seismeach Gearmánach GEOFON. Roinntear na sonraí go léir a thaifeadtear faoi pharaiméadar chreathanna talún go hidirnáisiúnta lenár gcomhpháirtithe seismeacha tríd an gCoimisiún Seismeach Idirnáisiúnta (ISC) agus lenár gcomhpháirtithe Eorpacha ag Lárionad Seismeach na hEorpa agus na Meánmhara (EMSC). Lean iarrachtaí chun an líonra a uasghrádú go dtí gréasán réad-ama fíor-nua-aimseartha trí thionscnamh an Rialtais i leith rabhaidh súnámaí.

Lean samhaltú geoidinimice d'fhorbairt imchuach trí obair an Ánra Iar-dhochtúra an Dr. Tadashi Yamasaki, maoinithe ag CosmoGrid, agus iarrthóir Ph.D. John Sheehan. Rinneadh scrúdú breise ar chriosanna laga sreabheolaíoch atá gaolmhar le gránmhéid mar rialúchán insilteachta a d'fhéadfadh a bheith i gceist ar an modh forbartha litisféarach agus críochnaíodh agus foilsíodh páipéar ag cur síos ar chuid den obair seo i rith na bliana. Rinne John Sheehan an cód ríomhaire a chomhuainiú le hé a rith ar na mbraislí CosmoGrid ach bhí an méadú 2-3 sa luas ríomhaireachtúil pas díomách. Buanaíodh comhoibriú leis na Grúpaí um Samhaltú Analóige agus Ríomhaireachtúil faoi threoir an Ollaimh Sierd Cloetingh agus an Dr. Dimitrios Sokoutis as Ollscoil Vrije in Amsterdam, agus chaith Yamasaki agus Sheehan tréimhsí sna grúpaí sin.

Mar chríoch, tá baint ag an Rannóg i dtionscnamh PICASSO, clár chun an t-aisiompú dronnach sa chóras Alborach Atlas a scrúdú, tionscnamh idirnáisiúnta, ildisiplíneach chun teicteonaic chasta imbhualadh phlátaí na hAfraice agus na hEorpa sa Mheánmhuir iartharach, in éineacht le forbairt thoir-theas agus b'fhéidir, fodhuchtú nó dílannú faoin Muir Alborach, soir ó Gibraltar, a scrúdú.



Jones' proposal for magnetotelluric acquisition was funded by Science Foundation Ireland, and the Section will be providing some of its portable seismic stations to the Spanish for deployment. The MT fieldwork will take two field seasons, and will commence in 2007. Involvement in the seismic component of PICASSO will occur through a studentship.

Astronomy and Astrophysics Section activities

The section was fortunate during the year in recruiting Professor Felix Aharonian from the MPI fuer Kernphysik in Heidelberg as the new Professor of Astronomy. Professor Aharonian is internationally know as one of the leading experts in high-energy gamma-ray astronomy and brings a large network of international contacts to the school. His presence in DIAS also resulted in an invitation to join the KM3net design study for a deep water neutrino observatory. Together with the existing strengths in particle acceleration theory this places the section in a strong position to become a leading European centre in the emerging area of astroparticlephysics.

The HESS system of high-energy gamma-ray telescopes, operated by a European consortium of which DIAS is a member, continued to produce many spectacular results during the year. Examples included the detection of strong 3.9 day orbital modulation in the gamma-ray emission from the micro-quasar LS5039, much detection of pulsar wind nebulae and another well-resolved shell-type supernova remnant. One of the more unusual results was a strong limit on the amount of general intergalactic background light at infra-red wavelengths derived from the observed transparency of the universe to high-energy gamma-rays. This in turn has cosmological implications for the star formation history of the universe.

Mhaoinigh Fondúireacht Eolaíochta Éireann tairiscint Jones faoi ghnóthú maighnéadaiteallúireach agus beidh an Rannóg ag tabhairt cuid dá stáisúin seismeacha iniompraithe do na Spáinnigh le hathlonnú. Mairfidh an tsaothar allamuigh dhá shéasúir allamuigh agus cuirfear tús leis i 2007. Is trí scoláireacht a ghlacfar páirt sa chomhpháirt sheismeach de PICASSO.

Réalteolaíocht agus Réaltfhisic

Bhí an t-ádh ar an rannóg seo gur earcaigh sí an tOllamh Felix Aharonian ón MPI fuer Kernphysik in Heidelberg i rith na bliana le bheith ina Ollamh nua le Réalteolaíocht. Tá cáil idirnáisiúnta ar an Ollamh Aharonian mar dhuine de na saineolaithe is mó le rá i réalteolaíocht gáma-ghathanna ardfhuinnimh agus tógann sé leis chuig an Scoil gréasán leathan de theagmhálacha idirnáisiúnta. De bharr é a bheith linn sa DIAS, fuarthas cuireadh le dul isteach i ndearadh staidéar KM3net le haghaidh réadlainne neoidríonó domhainmhara. In éineacht le neart na rannóige cheana féin i dteoiric luasghéarú cháithíní, cuireann sé seo an rannóg i riocht mar a mbeidh sí chun tosaigh mar lárionad Eorpach i réimse nua na fisice réaltcháithíní.

Lean cuibhreannas Eorpach HESS (Córas teileascóip gáma-gha ard-fhuinnimh), ar comhalta de é DIAS, ag giniúint mórán torthaí suntasacha i rith na bliana. Mar shampla, braitheadh modhnú fithiseach láidir de 3.9 lá san astúchán gháma-ghathanna ón mícrea-cuasár LS5039, braitheadh go leor réaltnéalta gaoithe pulsáir, agus iarsma dea-thaifithe de ollnóva sceallchineálach. Ceann de na torthaí ba shuntasaí ná teorainn láidir ar mhéid an tsolais chúlra ghinearálta idir-réaltrach ag tonnfhad infridhearg, faighte ó thréshoilseacht bhraite na cruinne i leith gáma-ghathanna ard-fhuinnimh. Dá réir sin, tá impleachtaí chosmeolaíochta aige seo do stair réaltfhoirmíochta na cruinne.

Large scale numerical simulations continue to gain in importance as tools to understand the complex processes involved in star formation and other astronomical systems. The school is fortunate to have a close working relationship with the Irish Centre for High-End Computing (ICHEC) which was partially funded from the CosmoGrid project and for the last six months of the year Professor L. Drury was acting director of the centre. CosmoGrid was also instrumental in facilitating a proposal to purchase a national capability computing system and a public procurement process under the aegis of HEAnet was started.

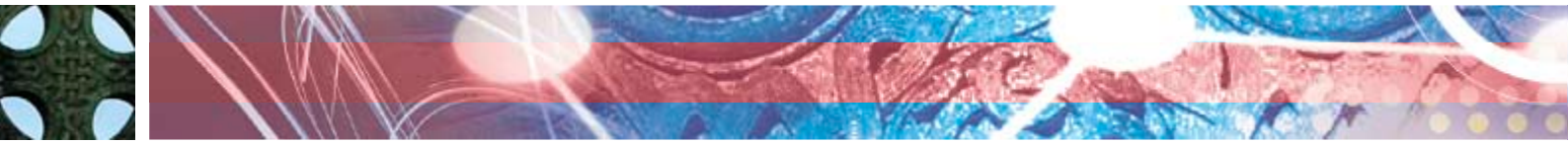
Star formation remains one of the main research foci of the section with very significant numerical work (as noted above), but also with strong observational programmes using a variety of ground-based and space-borne instruments. Of particular interest were observations made with the European Southern Observatory's VLT (Very Large Telescope) of an outflow associated with the low-mass brown dwarf star 2MASS1207-3932. At a mere 24 times the mass of the planet Jupiter this is the losest mass Galactic object observed to have an outflow and demonstrates the extraordinary universality of the outflow phenomenon across at least 10 orders of magnitude. Other important areas studied were the orientation of magnetic fields in star forming regions and the properties of dust grains in interstellar clouds.

Jets are intimately associated with the process of star formation and the school is the coordinator of an EU-funded research training network, JETset, bringing together workers on observations, simulations and laboratory studies of jet phenomena. Two international workshops were organised by the network during the year, one in Villiard de Lans from 9-13 January and one on the island of Elba from 4-8 September. The proceedings are being published by Springer-Verlag in the series "Lecture Notes in Physics".

Tá insamhladh uimhriúil ar mhórscála ag éirí níos tábhachtaí mar úirlisí chun tuiscint a fháil ar na próisis chasta a bhaineann leis an réaltfhoirmíocht agus le córais réalteolaíochta eile. Tá an t-ádh ar an Scoil go bhfuil dlúthchomhoibriú idir í agus Ionad na hÉireann don Ard-Ríomhaireacht (ICHEC), atá maoinithe i bpáirt ag an tionscnamh CosmoGrid, agus bhí an tOllamh L. Drury ina stiúrthóir ghníomhach ar an ionad don dara leath den bhliain. Bhí ról lárnach ag CosmoGrid freisin ag réiteach an bhóthair do thairiscint chun córas olléifeachtach ríomhaireachta náisiúnta a cheannach agus cuireadh tús le próiseas chun soláthar don earnáil phoiblí faoi choimirce HEAnet.

Tá an réaltfhoirmíocht fós ar cheann de phríomhréimsí thaighde na rannóige, le hobair uimhriúil an-suntasach (féach thuas), ach le cláir láidre bhreathnaitheacha chomh maith a úsáideann gléasanna éagsúla ar talamh agus sa spás. Cúis mhór suime ab ea breathnuithe a rinneadh ar eis-sreabhadh ón réalt abhac donn le mais íseal 2MASS1207-3932, ag baint úsáide as an Teileascóp Ollmhór (VLT) de chuid Réadlann Dheiscirt na hEorpa. Agus é ach 24 uair mais an phláinéid Iúpatar, seo é an rud réaltrach is scaoilte mais le heis-sreabhadh atá le breathnú agus léiríonn sé uilíocht iontach feiniméan an eis-sreabhadh thar 10 n-ord méadaíochta ar a laghad. Réimsí tábhachtacha eile a scrúdaíodh ab ea treoshuíomh réimsí maighnéadacha i réimsí réaltfhoirmíochta agus airíonna gráinní dheannaigh i néallta idir-réaltacha.

Tá dlúthbhaint ag scaird i bpróiseas na réaltfhoirmíochta agus comheagraíonn an Scoil, JETset, gréasán oiliúna taighde atá maoinithe ag an AE, ag tabhairt le chéile daoine atá ag obair ar bhreathnú, ar insamhladh, agus ar staidéir saotharlainne maidir le feiniméan scairde. D'eagraigh an gréasán dhá cheardlann idirnáisiúnta i rith na bliana, ceann amháin i Villiard de Lans, ón 9-13 Eanáir, agus an ceann eile ar oileán Elba, ón 4-8 Meán Fómhair. Tá na himeachtaí á bhfoilsiú ag Springer-Verlag sa tsraith "Lecture Notes in Physics".



In the rapidly developing area of gamma-ray afterburst studies the REM telescope, in which DIAS has a share, succeeded in making one of the first reliable measurements of the time of maximum brightness of the optical afterglow. This is important because it allows an almost model-independent estimate of how close to the speed of light the inital outburst has to be. The results show that, as previously expected but only from circumstantial and indirect evidence, the initial outflow must be travelling so fast that the so-called Lorentz gamma factor, a measure of the size of relativistic corrections, must be of order a few hundred. REM observations are triggered by detections from space-bourne instruments, at the moment the main source being the SWIFT satellite; a student in the section was trained as a "Burst advocate" to participate in this programme. In a parallel activity detailed optical spectra of some burst afterglows were studied to determine the properties of the environment in which the burst occurred. The REM telescope was also used between burst triggers for monitoring of active galaxies.

A peculiarity of high-mass stars is that a surprisingly large number are observed to be so-called runaway stars with space velocities significantly larger than the bulk of the stars in our Galaxy. Two possible mechanisms have been proposed to explain these stars; that the star was originally part of a binary system where one star exploded as a supernova, or that the star was ejected with high velocity as a result of three or more body gravitational interactions in regions with very high star number densities. Both processes have been simulated and it appears that a combination of both processes is required to explain the observations. Other possible clues as to the run-away formation process come from observed peculiarities in the chemical composition and rotation rate of these stars.

I gcás staidéir ar iar-roiseanna gáma-gha, réimse atá ag forbairt go tapa, d'éirigh leis an teileascóip REM, a bhfuil sciar ag DIAS ann, ceann de na tomhais iontaofa is luaithe a dhéanamh d'am ghile uasta an larlaoma optúil. Tá sé seo tábhachtach mar go gceadaíonn sé meastachán a dhéanamh, beagnach beag beann ar shamhail, ar cé chomh gar do luas an tsolais gur gá don rois thosaigh a bheith. Léiríonn na torthaí, toradh a bhí déanta amach roimh ré, ach ar bhonn fhianaise imthoisceach agus indíreach amháin, go gcaithfidh an eis-sreabhadh tosaigh a bheith ag taisteal chomh tapa sin go mbeidh an gámafachtóir Lorentz, tomhas de mhéid ceartúchán coibhneasaíoch, ag ord de roinnt céadta. Truicearaítear breathnú REM le braith ó uirlisí spás-iompartha, satailít SWIFT an phríomhfhoinse faoi láthair; oileadh mac léinn sa rannóg ina "Rois abhchóide" d'fhonn a bheith páirteach sa chlár. I ngníomhaíocht chomhthreomhar, scrúdaíodh go mion na speictrim optúla de roinnt rois-iarlaom, chun airíonna na timpeallachta inar tharla an rois a chinntiú. Úsáideadh teileascóip REM freisin idir rois-thruicir chun monatóireacht a dhéanamh ar réaltraí gníomhacha.

Tréith ar leith de réaltaí ard-maise ná go mbreathnaítear líon iontach ard díobh a bheith ina réaltaí éalaitheacha, mar a thugtar orthu, le treoluasanna spáis níos mó ná mórchuid na réaltaí inár réaltra. Moltar dhá mheicníocht intarlaithe mar mhíniú ar na réaltaí seo; gur thosaigh an réalta mar chuid de chóras déréalta ach gur phléasc réalta amháin mar ollnóva, nó gur díbríodh an réalta ar ardluais de bharr trí nó níos mó idirghníomhaíochtaí imtharraingteacha reanna i réigiúin ina bhfuil dlúsanna de líonta an-ard réaltaí. Rinneadh an dá phróiseas a insamhladh agus feictear gur gá comhcheangal den dá phróiseas a bheith ann chun na mbreathnóireachta a mhíniú. Tá leidí eile ann, b'fhéidir, faoi phróiseas foirmíochta na réaltaí éalaithe i dtréithe ar leith de chomhshuíomh ceimiceach agus ráta rothlaithe na réaltaí seo.

The school has a minor but significant role in the development of the MIRI instrument for the James Webb Space Telescope (the successor to the Hubble space telescope) and took vicarious pleasure in the awarding of the Nobel prize in physics to Dr John Mather, the project scientist in charge of the JWST. In another instrumentation initiative the school has taken the lead in organising Irish participation in the development of the NAHUAL spectrometer for the Spanish "Gran Telescopio Canarias" in the Observatorio del Roque de los Muchachos.

School Outreach

The Statutory Public Lecture of the School was given by Professor Sierd Cloetingh of the Vrije University of Amsterdam on *"The Changing Earth We Live On: The Need For a European Strategy"* at Trinity College Dublin on 11 May. Professor Cloetingh, who is President of the International Lithosphere Programme, a body jointly sponsored by the International Union of Geological Sciences and the International Union of Geodesy and Geophysics, is led proponent for the TOPO-Europe initiative – see the Geophysics Section report for more information.

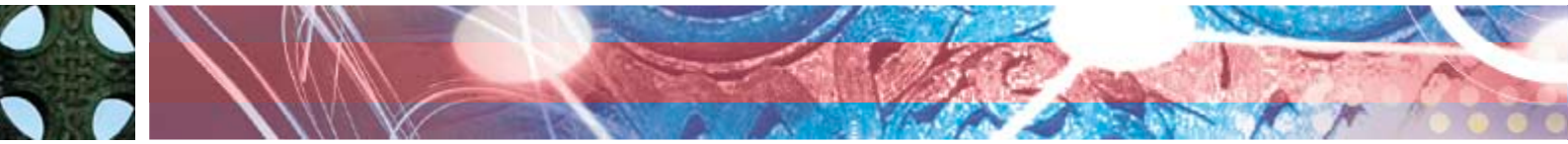
The series of open nights in Dunsink Observatory on the first and third Wednesday of each month between October and March continued and was supplemented by a number of special events organised for specific groups, such as school parties and university students, and on special occasions such as the annual science week. There is considerable demand for these events and the feedback received was generally positive. The assistance of the students of the school, of the volunteers from the Irish Astronomical Society, and of the many speakers who contributed to the events is gratefully acknowledged.

Tá ról beag, ach tábhachtach, ag an Scoil i bhforbairt na hionstraime MIRI do Spásteileascóp James Webb (JWST, a leanfaidh Spásteileascóp Hubble) agus bhaineamar sult ionadach as an nGradam Nobel i bhfisic a bhronnadh ar an Dr John Mather, an t-eolaí tionscnaimh os cionn an JWST. I dtionscnamh instriomaíochta eile, bhí an Scoil chun tosaigh ag eagrú rannpháirtíocht na hÉireann i bhforbairt speictriméadar NAHUAL do "Gran Telescopio Canarias" na Spáinne san Observatorio del Roque de los Muchachos.

For-rochtain na Scoile

Thug an tOllamh Sierd Cloetingh, Ollscoil Vrije, Amsterdam, Léacht Phoiblí Reachtúil na Scoile ar *"The Changing Earth We Live On: The Need For a European Strategy"* i gColáiste na Tríonóide, Baile Átha Cliath, ar an 11ú Bealtaine. Is é an an tOllamh Cloetingh, Uachtarán an Chláir Litisféir Idirnáisiúnta, eagraíocht atá cómhaoinithe ag Aontas Idirnáisiúnta na nEolaíocht Geolaíoch agus ag Aontas Idirnáisiúnta na Geodasaíochta agus na Geofisice, príomh-mholtóir an tionscnaimh TOPO-Europe – tá breis eolais i dtuairisc na Rannóige Geofisice.

Leanadh leis an tsraith oícheanta oscailte i Réadlann Dhún Since ar an gcéad agus ar an dtríú Céadaoin den mhí idir Mí Dheireadh Fómhair agus Mí an Mhárta agus eagraíodh roinnt imeachtaí speisialta do ghrúpanna éagsúla, mar shampla, grúpanna scoile agus mic léinn ollscoile, agus ar ócáidí speisialta mar an tseachtain eolaíochta bhliantúil. Tá éileamh nach beag ar na himeachtaí seo agus bhí an t-aiseolas uatha dearfach don chuid is mó. Cúitímid go buíoch a gcuidiú leis na himeachtaí le mic léinn na Scoile, leo siud ón Irish Astronomical Society a chabhraigh go deonach, agus leis na cainteoirí go léir.



The Outreach programme in Geophysics is less established than in Astronomy and Astrophysics, but activities are increasing. Experimental Officer Tom Blake gave a lecture on seismology to transition year students, and more are planned for 2007. Radio interviews took place through the year with Blake and Jones on the possible danger from a tsunami in the North Atlantic.

Health and Safety initiatives

Following an intensive H&S Audit in Nov 2004 several issues were highlighted and reported to the H&S committee for attention. Throughout 2006 many of these issues were successfully addressed. More serious issues which required inputs from OPW and planning permission still remain to be addressed. During the year there were two fire drills for the emergency evacuation of the building. These were carried out successfully and all new staff was trained in the use of fire hydrants. First Aid people were sent on a refresher course during the year to update their certification.

The School's internal website now contains the H&S Statement for No 5 Merrion Square along with the details of the H&S Audits for 2004 and 2005. An H&S email incident reporting system has been put in place in No 5 Merrion Square so that all staff are able to rapidly report H&S issues for attention.

Ongoing issues regarding H&S in 5 Merrion Square are being dealt with by Experimental Officer Tom Blake as Assistant H&S Officer for Merrion Square and Senior Technician Clare Horan as H&S Staff Representative.

Níl clár For-rochtain na Geofisice chomh daingean suite le chlár na Réalteolaíochta agus na Réaltfhisice, ach tá na gníomhaíochtaí ag méadú. Thug an tOifigeach Tástála Tom Blake léacht ar an tseismeolaíocht do mhic léinn Idirbhliana agus tá tuilleadh beartaithe do 2007. Cuireadh agallaimh raidió ar Blake agus Jones i rith na bliana faoin mbaol a d'fhéadfadh teacht le súnámaí san Atlantach Thuaidh.

Tionscnaimh Sláinte agus Sábháilteachta

Tar éis dianiniúchadh S&S i mí na Samhna 2004, ardaíodh roinnt ábhar a cuireadh faoi bhráid an choiste S&S lena mbreithniú. Réitíodh go leor díobh seo go rathúil i rith 2006. Tá nithe eile níos tromchúisí fós ann le réiteach, nithe ina raibh gá le hionchur ón OPW agus ina raibh cúrsaí cead pleanála i gceist. Bhí dhá dhruil dóiteáin i rith na bliana mar chleachtadh i gcás aslonnaithe éigeandála an fhoirgnimh. D'éirigh go maith leo agus oileadh gach ball foirne nua in úsáid hiodraint dóiteáin. Cuireadh pearsanra garchabhrach ar chúrsa athnuachana i rith na bliana lena ndeimhnithe inniúlachta a thabhairt suas chun dáta.

Ar shuíomh láithreáin inmheánach na Scoile anois tá Ráiteas S&S do 5 Cearnóg Mhuirfean mar aon le sonraí Iniúchtaí S&S do 2004 agus 2005. Tá córas tuairiscithe S&S i leith teagmhas ríomhphost curtha i bhfeidhm i 5 Cearnóg Mhuirfean sa chaoi gur féidir le gach ball foirne fadhbanna S&S a thuairisciú go tapa.

Tá nithe leanúnacha a bhaineann le S&S i 5 Cearnóg Mhuirfean faoi bhráid an Oifigigh Tástála Tom Blake, mar Oifigeach Cúnta S&S do Chearnóg Mhuirfean, agus an Teicneoir Sinsireach Clare Horan, mar Ionadaí Foirne S&S.

SCHOOL OF THEORETICAL PHYSICS
SCOIL NA FISICE TEOIRICIÚLA

Partly because two suggested members for the new Governing Board declined last year, and also in order to strengthen the Board further, it was decided to seek approval for the appointment of four eminent new members to the Board: Professor Peter Knight (London), Professor Robbert Dijkgraaf (Amsterdam), Professor Lene Hau (Harvard) and Professor Samson Shatashvili (Trinity College). We are very happy to report that these appointments were sanctioned and we welcome the new members to the Board.

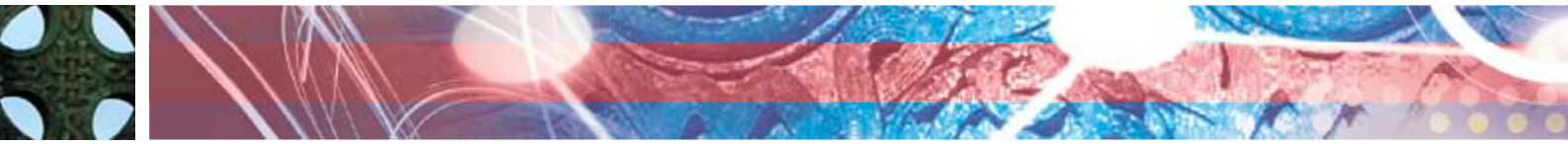
In January, interviews were held for the appointment of another Schroedinger Fellow. The committee consisting of Professors Nahm, Dorlas, O'Connor, Shatashvili and Nicolai decided to look for other suitable candidates and in February another candidate, Dr. Christian Roemelsberger was interviewed and offered the position. He joined the School in November and it is a pleasure to welcome him to the staff. In the summer, one of the other Fellows, Dr. Lisovyy accepted a permanent position in France. An advertisement was placed in November to attract a new candidate for this position. Interviews are planned for early January 2007.

In May the second series of John Lewis Lectures were held in collaboration with the Hamilton Mathematics Institute of Trinity College. This time the Distinguished John Lewis Lecturer was Professor Srinavasan Varadhan from the Courant Institute in New York. He gave 3 lectures on Large Deviation Theory. He also agreed to give the Statutory Public Lecture on Randomness, Chance and Probability. In fact, two Statutory Lectures were given this year, as the 2005 lecture was deferred until February of 2006. It was given by Professor Luminet from the Observatory of Paris about the Shape of the Universe.

Go pointe áirithe toisc gur dhiúltaigh beirt a bhí molta mar bhaill don Bhord Rialaithe anuraidh, agus chun cur le neartú an Bhoird freisin, cinneadh cead a iarraidh le ceathrar baill oirirceacha a cheapadh ar an mBord: An tOllamh Peter Knight (Londain), An tOllamh Robbert Dijkgraaf (Amsterdam), An tOllamh Lene Hau (Harvard) agus An tOllamh Samson Shatashvili (Coláiste na Tríonóide). Tá áthas orainn a rá gur ceadaíodh na ceapacháin seo agus fáiltímid roimh na baill nua ar an mBord.

Tionóladh agallaimh i mí Eanáir chun Ánra Schroedinger eile a cheapadh. Bhí na hOllúna Nahm, Dorlas, O'Connor, Shatashvili agus Nicolai ar an gcoiste. Shocraigh siad iarrthóirí oiriúnacha eile a lorg agus i mí Feabhra, cuireadh agallamh ar iarrthóir eile, an Dr. Christian Roemelsberger, agus tairgíodh an post dó. Thosaigh sé sa Scoil i mí na Samhna agus tá áthas orainn fáiltiú roimhe. Sa samhradh, ghlac duine de na hÁnraí eile, Dr. Lissovy, post buan sa Fhrainc. Fógraíodh an post i mí na Samhna agus beidh agallaimh go luath i mí Eanáir 2007.

I mí na Bealtaine, tionóladh an dara shraith de Léachtaí John Lewis i gcomhar le hInstitiúid Matamaitice Hamilton, Coláiste na Tríonóide. An uair seo ba é an Léachtóir Oirirc John Lewis ná an tOllamh Srinavasan Varadhan ón Courant Institute i Nua Eabhrac. Thug sé 3 léacht ar Theoiric an Mhór-Dhiallais. Thoiligh sé an Léacht Phoiblí Reachtúil a thabhairt freisin, ar Randamacht, Seans agus Dóchúlacht. Mar a tharla, bhí dhá Léacht Reachtúla i mbliana, toisc léacht 2005 a bheith curtha ar athló go dtí mí na Feabhra 2006. Ba é an tOllamh Luminet ó Réadlann Paris a thug í, faoi Chruth na Cruinne.



May was a very busy time as the Institute also hosted the 13th Irish Quantum Field Theory Meeting from 12-13 May. There were some very eminent speakers, notably Professors Juan Malcadena (Princeton) and Nicolai Reshetikhin (Berkeley).

The School contributed to the Science Week Ireland with a talk by Professor Dorlas on "How to Solve Sudoku by Computer", held in Dunsink.

For the occasion of the Board meeting in November, Professor Dijkgraaf gave a specialist public lecture (a first!) on "Gauge Theories and Free Fermions". Another first was the hosting of a Fulbright Fellow for 6 months, Professor O. W. Greenberg from Maryland. He gave an interesting insight into the history of the quark model at the Winter Symposium, which as is now customary, was held in December in collaboration with the Irish Mathematical Society.

Other main developments during the year were:

Personnel

- Dr. Alexander Povolotsky took up his position as Schrödinger Fellow in January 2006.
- The first Schrödinger Fellow, Dr. Oleg Lisovyy, accepted a permanent position at the University of Tours (France) and terminated his contract on 11 September 2006.
- A new Schrödinger Fellow, Dr. Christian Römelsberger took up his position in November.
- Two IRCSET Fellows, Dr. Seckin Kurkcuoglu and Dr. Marco Panero left in November, and three new Fellows started work: Dr. Subrata Bal (September), Dr. Oliver Rosten and Dr. Francis Dolan (both in November).

Bhí mí na Bealtaine an-ghnóthach toisc gur óstáil an Institiúid an 13ú Comhdháil Éireannach ar Réimsetheoiric Chandamach chomh maith, ar an 12-13 Bealtaine. Bhí roinnt cainteoirí an-oirirc ann, go háirithe na hOllúna Juan Malcadena (Princeton) agus Nicolai Reshetikhin (Berkeley).

Chabhraigh an Scoil le Seachtain Náisiúnta na hEolaíochta nuair a thug an tOllamh Dorlas caint faoi "Conas Sudoku a Réiteach le Ríomhaire" i nDún Since.

Ar ócáid chruinniú an Bhoird i mí na Samhna, thug an tOllamh Dijkgraaf léacht phoiblí do speisialtóirí (rud nár tharla riamh roimhe seo!) ar "Tomhsairetheoiricí agus Saorfharmóin". Rud eile nár tharla riamh roimhe seo ab ea teacht Ánra Fulbright, an tOllamh O.W. Greenberg ó Maryland, ar feadh 6 mhí. Thug sé léargas suimiúil ar stair an chuarcshamhla ag an Siompóisiam Gheimhridh a tionóladh, mar is gnách anois, i mí na Nollag, i gcomhar le Chumann Matamaitice na hÉireann.

Ar na príomhfhorbairtí eile i rith na bliana bhí:

Pearsanra

- Ghlac an Dr. Alexander Povolotsky lena phost mar Chomhalta Schrödinger i mí Eanáir 2006.
- Ghlac an chéad Comhalta Schrödinger, an Dr. Oleg Lisovyy, le post buan ag ollscoil Tours (an Fhrainc) agus chríochnaigh sé a chonradh ar an 11 Meán Fómhair 2006.
- Thosaigh Comhalta Schrödinger nua, an Dr. Christian Romelsberger ag obair sa scoil i mí na Samhna.
- D'fhág beirt Chomhalta IRCSET, an Dr. Seckin Kurkcuoglu agus an Dr. Marco Panero i mí na Samhna, agus thosaigh triúr Comhalta nua ag obair: an Dr. Subrata Bal (Meán Fómhair), an Dr. Oliver Rosten agus an Dr. Francis Dolan (mí na Samhna).

- Dr. Stefan Adams finished his Scholarship on 30 November, and a new Scholar, Dr. Christian Saemann started on 1 June.
- One predoctoral Scholar, Idrish Huet Hernandez, finished in December, and two other Ph.D. Students, Ciara Morgan and Anne Ghesquiere became Scholars from May 2006.

Organisational Activities and Achievements

The second series of John Lewis Lectures were organised in collaboration with the Hamilton Mathematics Institute (TCD). They were given by Professor Srinivasan Varadhan (Courant Institute, New York) from 15-18 May. Three lectures were given on the following topics: Random Walks in a Random Environment, Basic Issues; Issues Related to Large Deviations; Connections to Homogenization.

The 13th Irish Quantum Field Theory Meeting was organized by members of the School (Professors Nahm and O'Connor) and hosted by the Institute. At this occasion, the Distinguished O'Raifeartaigh Lecture was given by Professor Malcadena.

The DIAS Winter Symposium was organised in collaboration with the Irish Mathematical Society. It took place on 14-15 December.

The 2005 Statutory Public Lecture was given on 2 February by Professor Jean-Pierre Luminet from Paris about "The Shape of the Universe".

The Statutory Public Lecture 2006 was given by Professor Srinivasan Varadhan on 17 May. The title was: "Randomness, Chance and Probability". It took place in University College Dublin and attracted a large audience.

- Chríochnaigh an Dr. Stefan Adams a Scoláireacht ar an 30 mí na Samhna., agus thosaigh Scoláire nua, an Dr. Christian Saemann ar an 1 Meitheamh.
- Chríochnaigh Scoláire réamh-dhochtúireachta amháin, Idrish Huet Hernandez, i mí na Nollag, agus thosaigh beirt mhac léinn Ph.D., Ciara Morgan agus Anne Ghesquiere mar Scoláirí ó mhí Bealtaine 2006.

Gníomhaíochtaí Eagraíochtúla agus Gnóthachtálacha

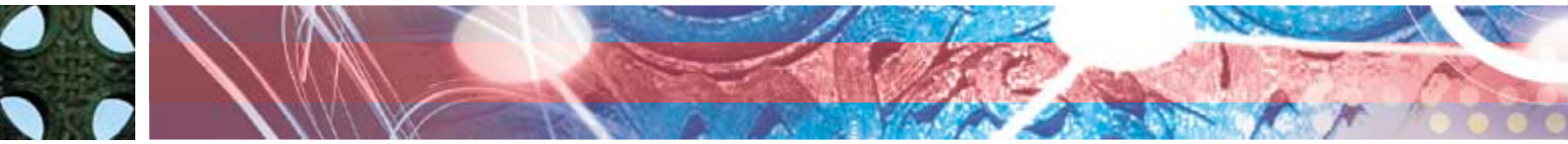
Tionóladh an dara sraith de Léachtaí John Lewis i gcomhar le hInstitiúid Matamaitice Hamilton, Coláiste na Tríonóide. Ba é An tOllamh Srinavasan Varadhan (Courant Institute, Nua Eabhrac) a thug iad, ón 15-18 Bealtaine. Tugadh trí léacht ar na hábhair a leanas: "Siúlóidí Randamacha i dTimpeallacht Randamach, Buncheisteanna"; "Ceisteanna Ag Baint Le Mór-Diallta"; "Cónaisc Le hAonchineálú/Hómaiginiú".

D'eagraigh na hollúna Nahm agus O'Connor, baill na Scoile, an 13ú Comhdháil Éireannach ar Réimsetheoiric Chandamach, agus d'óstáil an Institiúid í. Ar an ócáid seo, thug an tOllamh Malcadena Léacht Oirirc Uí Raifeartaigh.

Reachtáladh Siompósiam Gheimhridh an DIAS i gcomhar le Cumann Matamaitice na hÉireann ar an 14-15 Nollag.

Thug an tOllamh Jean-Pierre Luminet, Paris, an Léacht Phoiblí Reachtúil 2005 ar "Cruth na Cruinne" ar an 2 Feabhra.

Thug an tOllamh Srinivasan Varadhan an Léacht Phoiblí Reachtúil 2006 ar "Randamacht, Seans agus Dóchúlacht" ar an 17 Bealtaine i gColáiste na hOllscoile Bhaile Átha Cliath, léacht a mheall lucht éisteachta mór.



Research Activities

Statistical Mechanics and Disordered Systems

A large project in collaboration with Prof. Joe Pule (UCD) and Christophe Dobrovolny on Anderson localisation in an armchair nanotube was finally completed. This work will be published in the proceedings of the conference in honour of the late Professor John Lewis, which was held in 2005. It is due to appear early 2007.

The Bose-Hubbard model, first introduced by Fischer et al. in 1987, is currently very popular for describing Bose-Einstein condensation in an optical lattice. A long-range-hopping version of this model was solved completely a few years ago, together with J.-B. Bru. Last year a study of the same model but with disorder was initiated in a collaboration with Leonid Pastur (Kharkov) and Valentin Zagrebnov (Marseille). Again, a variational expression for the pressure can be derived. A detailed analysis of this expression in a variety of cases has revealed interesting new behaviour due to the disorder.

The Feynman-Kac representation of a Bose gas on a lattice with interaction expresses the pressure in terms of an expectation w.r.t. a symmetrised collection of random walks. The corresponding measure has been little studied. A number of large deviation results for this measure were proved. This may have applications to certain models of a Bose gas. In fact, after leaving the Institute, Stefan Adams has managed to apply these results to the problem of long cycles in a Bose gas.

Work on quantum coding theory in collaboration with Dr. Nilanjana Datta (Cambridge) has progressed significantly this year. A new proof of the Holevo-Schumacher-Westmoreland theorem (analogue of Shannon's channel coding theorem) was found which uses a quantum version of the Feinstein lemma. This work was presented (by N.D.) at the 2006 IEEE International Symposium on Information Theory in Seattle. This work led us to consider an extension

Gníomhaíochta Taighde

Meicnic Staitistiúil agus Córais Neamhordúla

Cuireadh críoch faoi dheireadh le tionscadal mór, i gcomhoibriú leis an Ollamh Joe Pule (UCD) agus Christophe Dobrovolny, ar logálú Anderson i nanaifheadán cathaoir uilleach. Foilseofar an saothar seo in imeachtaí na comhdhála a reachtáladh i 2005 in onóir don Ollamh John Lewis, nach maireann. Beidh sé ar fáil go luath i 2007.

Chuir Fischer et al. samhail Bose-Hubbard chun cinn i 1987 ar dtús agus tá an tsamhail sin an-choitianta faoi láthair chun cur síos a dhéanamh ar chomhdhlúthú Bose-Einstein i laitís optúil. Roinnt blianta ó shin, i gcomhoibriú le J.-B. Bru, réitíodh go hiomlán leagan preabach fadréimseach den tsamhail seo. Anuraidh, i gcomhoibriú le Leonid Pastur (Kharkov) agus Valentin Zagrebnov (Marseille), cuireadh tús le staidéar ar an tsamhail céanna, ach le neamhord. Arís, is féidir slonn athrúchánach don bhrú a fháil. Léiríonn mionanailís ar an tslonn i gcásanna éagsúla iompraíocht nua shuimiúil de bharr an neamhoird.

Sloinneann léiriú Feynman-Kac ar ghás Bose ar laitís le hidirghníomhú an brú mar ionchas w.r.t. bailiúchán siméadraithe de shiúlóidí randamacha. Is beag staidéar atá déanta ar an dtomhas comhfhreagrach. Cruthaíodh roinnt torthaí mór-dhiallta don tomhas seo. Seans go bhfuil feidhmeanna aige seo do shamhlacha áirithe de ghás Bose. Déanta na fírinne, tar éis dó an Institiúid a fhágáil, d'éirigh le Stefan Adams na torthaí seo a chur i bhfeidhm ar fhadhb na dtimthriallta fada i ngás Bose.

Rinneadh dul chun cinn suntasach i mbliana san obair ar theoiric chódú chandamach, i gcomhar leis an Dr. Nilanjana Datta (Cambridge). Aimsíodh promhadh nua do theoirim Holevo-Schumacher-Westmoreland (analóg theoirim Shannon ar chódú cainéal) a úsáideann leagan candamach de lemma Feinstein. Chuir N.D. an obair i láthair ag an Siompósiam Idirnáisiúnta 2006 IEEE ar Theoiric Faisnéise i Seattle. De

of this theorem to channels with memory. The extension to channels with short-term memory is technical but straight-forward. However, it turned out that this had already been done by Kretschmann and Werner, using different methods. We then considered a class of examples of channels with long-term memory. The simplest such class has the form of a convex combination of memoryless channels, which amounts to an initial random choice of channel. The capacity was found to be essentially the minimum of the capacities of the individual channels. Work on more general channels with long-term memory is in progress.

The collaboration with V. B. Priezzhev (Dubna, Russia) concerning the exact solution of the Asymmetric Simple Exclusion Process on a ring was continued. This process is a simple model of a non-equilibrium process where particles hop from one site of a lattice to the next with a certain rate provided this site is empty. The model can be solved exactly in principle using the so-called Bethe Ansatz, but the resulting equations are difficult to analyse. We managed to compute the minimal current probability in this model and analysed its long-time asymptotics.

An SFI grant was secured for the study of the Bethe Ansatz solution of quantum spin models, in particular the Heisenberg spin chain. This solution (first obtained by Bethe in 1931) involves a number of assumptions which have not been proven, the most intriguing of which being the so-called *string hypothesis*.

Field Theory and Particle Physics

The principal line of research pursued by *Professor O'Connor's group* in 2006 continued to be the exploration of field theory in its matrix regularized form known as "fuzzy field theory". Fuzzy field theories are field theories where the algebra of functions of a manifold is replaced by a suitable matrix algebra, with matrix dimension N, and the Laplace-Beltrami

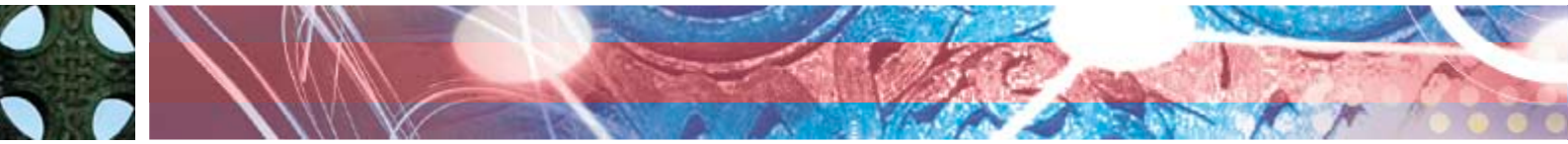
bharr na hoibre seo, smaoiníomar gurbh fhéidir an teoirim a leathnú go dtí cainéil le cuimhne. Tá an leathnú go dtí cainéil le cuimhne ghearrthéarmach teicniúil, ach tá sé simplí. Bhí sé seo déanta cheana féin, áfach, le modhanna eile, ag Kretschmann agus Werner. Smaoiníomar ansin ar aicme de shamplaí de chainéil le cuimhne fhadthéarmach. Tá cruth theaglaim dhronnach de chainéil gan chuimhne ag an aicme is simplí, b'ionann agus rogha randamach chainéil ag an tús. Fuarthas gurb ionann go bunúsach an tuilleadh agus íosthuilleadh na gcainéal éagsúil. Tá obair ar siúl fós ar chainéil níos ginearálta le cuimhne fhadthéarmach.

Leanadh leis an gcomhoibriú le V. B. Priezzhev (Dubna, An Rúis) faoin réiteach baileach ar an bPróiseas Eisiaimh Neamhshiméadrach Simplí ar fháinne. Is é atá sa phróiseas seo ná samhail shimplí de phróiseas neamhchothromaíochta ina léimeann cáithíní ar laitís ag ráta faoi leith go dtí an chéad suíomh eile ar an laitís, a fhad agus atá an suíomh folamh. Is féidir an tsamhail a réiteach go beacht i bprionsabal leis an Bethe Ansatz, mar a thugtar air, ach is deacair anailís a dhéanamh ar na cothromóidí a fhaightear. D'éirigh linn dóchúlacht íos-srutha na samhla seo a ríomh agus rinneamar anailís ar a chuid asamtóitigh fhadtréimhseacha.

Fuarthas deontas SFI le haghaidh staidéar ar réiteach Bethe Ansatz ar shamhail ghuairneacha chandamacha, an tslabhra ghuairneach Heisenberg ach go háirithe. Tá roinnt foshuímh neamhchruthaithe i gceist sa réiteach seo (faighte don chéad uair ag Bethe i 1931); tugtar *an tsreanghipitéis* ar an gceann is inspéise díobh.

Réimsetheoiric agus Fisic Cháithíní

Don chuid is mó, lean an *grúpa i gcomhar leis an Ollamh O'Connor* dá imscrúdaithe ar an ngné sin den réimsetheoiric mhaitrís-rialaithe ar a dtugtar "an réimsetheoiric doiléire". Is réimsetheoiricí doiléire iad réimsetheoiricí mar a nglacann ailgéabar na bhfeidhmeanna d'iolarthán ionad ailgéabar oiriúnach maitríse, le toise maitríse N, agus in ionad oibreoir



operator by a suitable double-commutator Laplacian, mapping matrices to matrices of the same dimension. The triple of matrix algebra, norm and Laplacian defines the geometry of the fuzzy space.

The "fuzzy approach" provides a regularization of field theory (and hopefully string theory) that is well adapted to the non-perturbative study of both commutative and noncommutative field theories including those with chiral fermions. It is also well suited to the study of supersymmetric models as it is possible to truncate the theory to a finite number of degrees of freedom while retaining the exact supersymmetry.

The ingredients are then a graded matrix algebra, where the matrix now contains both commuting and anti-commuting (or Grassmann) entries, and a supertrace which replaces the trace over matrices.

At the level of the classical Euclidean action, the method naturally preserves most of the fundamental symmetries of the theory in question, though these can be broken spontaneously. A continually increasing number of fuzzy spaces has now been studied including all flag and superflag manifolds as well as a further large class of algebraic varieties.

A new construction of fuzzy CP^N was made which allows access to all non-commutative equivariant complex vector bundles over fuzzy CP^N. The construction led to a simplified construction of polarisation tensors on S^2 that generalises to CP^N. Laplacians and natural non-commutative covariant derivative operators were identified. Curiously, as part of the construction, composite oscillators were found that obey Heisenberg algebra on an appropriate reduced Fock space.

Laplace-Beltrami, cómhalartán dúbailte Laplace, ag mapáil maitrísí go maitrísí den toise céanna. Sonraíonn an triarach d' ailgéabar maitríse, norm agus Laplace céimseata an spáis doiléir.

Tugann an cur chuige "doiléir" an réimsetheoiric (agus, go dóchasach, an tsreangtheoiric) chun rialtachta atá an-fheiliúnach do staidéar neamhchorraithe ar réimsetheoiricí cómhalartacha agus neamhchómhalartacha araon, iad siúd le fearmóin ciriúla san áireamh.

Oireann sé go maith freisin do staidéar ar shamhlacha forshiméadracha toisc gur féidir an teoiric a theascadh go dtí cinn a bhfuil líon teoranta céimeanna saoirse acu ach a chaomhnaíonn forshiméadracht chruinn fós. Is maitrís ailgéabrach grádaithe iad ansin na comhábhair, ina bhfuil iontrálacha comaitéarachta agus neamh-chomaitéarachta (nó Grassmann), agus for-rian a ghlacann áit an riain os cionn maitrísí.

Ag leibhéal an ghníomhaithe Euclideach clasaiceach, coinníonn an modh mórchuid na siméadrachtaí bunúsacha den teoiric faoi chaibidil, cé gur féidir iad seo a bhriseadh go spontáineach. Tá méadú ag teacht go leanúnach ar líon na spásanna doiléire a bhfuil staidéar déanta orthu, ina measc na hiolartháin bhratacha agus forbhratacha go léir agus móraicme eile de chineálacha ailgéabracha.

Rinneadh déantús nua de CP^N doiléir a ligeann teacht ar na bearta casta veicteora neamh-inmhalartaithe comhchlaochlaitheacha go léir os cionn CP^N doiléir. Ón déantús seo, fuarthas déantús simplithe de theinseoirí pholaraithe ar S^2 a dhéanann ginearálú go dtí CP^N. Aithníodh Laplachanaigh agus oibritheoirí nádúrtha neamh-inmhalartaithe comhmhaltartacha díorthaigh. Aisteach go leor, mar chuid den déantús, thángthas ar ascaltóirí ilchodacha a chloíonn le hailgéabar Heisenberg ar spás Fock laghdaithe oiriúnach.

It is planned to explore the K-theory associated with these constructions. As part of this process David Evans of Cardiff gave an introductory set of lectures on this subject.

Numerical studies into a variety of fuzzy models have also continued apace.

It was confirmed that a ϕ^4 model on the fuzzy sphere spontaneously breaks rotational symmetry in part of its parameter space and in another study, the phase diagram of the ϕ^4 model on $R \times S^2_F$ was analysed. Simulations are also well advanced on a model with fermions, which becomes the Wess-Zumino model in the flat limit. This work is in collaboration with Wolfgang Biedenholz (Berlin) and Jan Volkholz (Berlin) and is now being run at the HLRN (Northern German Computing Center).

Numerical work was also carried out on a three-matrix model which is a fuzzy regularization of Yang-Mills theory on the fuzzy sphere.

In *Professor Nahm's group* two-dimensional integrable field theories were studied. These theories have gotten new importance because of a surprising connection with string theory. Strings on Anti-de-Sitter space are classically integrable, and accumulated evidence suggests that this integrability after quantisation persists. Moreover, AdS/CFT duality relates the corresponding string spectrum to the scaling dimensions of gauge theory operators. In perturbation theory, the latter are related to energy levels in an integrable lattice model. A complete solution is not yet in sight, however, in spite of several hundred publications in this area. It is likely that a new mathematical structure must be found for systems of finite size which generalises the Yangian symmetry of infinitely extended systems.

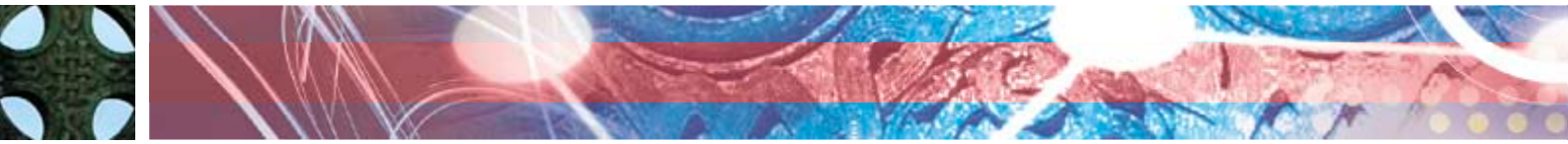
Tá sé i gceist an K-teoiric a bhaineann leis na déantúis seo a iniúchadh. Mar chuid den phróiseas seo, thug David Evans, Cardiff, sraith réamh-léachtaí ar an ábhar seo.

Tá staidéir uimhriúla ar shamhlacha dhoiléire éagsúla ag leanúint ar aghaidh.

Deimhníodh go mbriseann samhail ϕ^4 ar an sféar doiléir go spontáineach a shiméadracht rothlaithe i gcuid dá phairiméadarspás, agus i staidéar eile, rinneadh anailís ar phasléaráid na samhla ϕ^4 ar $R \times S^2_F$.

Tá insamhaltaí ar shamhail le fearmóin, gurb ionann í agus samhail Wess-Zumino sa teorainn chomhthrom ag dul ar aghaidh go maith freisin. Tá an obair seo i gcomhair le Wolfgang Biedenholz (Berlin) agus Jan Volkholz (Berlin) agus tá sí ar siúl anois ag an HLRN (Ionad Ríomhaireachta Thuaisceart na Gearmáine). Rinneadh obair uimhriúil chomh maith ar shamhail thrí-mhaitrís, gur tabhairt chun rialtachta doiléire í ar theoiric Yang-Mills ar an sféar doiléir.

Lean *grúpa an Ollaimh Nahm* ag déanamh staidéir ar réimsetheoiricí dhéthoiseacha insuimeálaithe. Tá tábhacht nua leis na teoiricí seo toisc go bhfuil nasc iontach acu le sreangtheoiric. Tá sreanga ar spás Frith-de Sitter insuimeálaithe go claisiceach agus tugann an méid fianaise go dtí seo leid go leanann an insuimeálacht tar éis chandamú. Thairis sin, baineann dúbailteacht AdS/CFT speictream comhfhreagrach na sreang leis na toisí scálaithe de na hoibreoirí tomhasteoirce. I dteoiric na corraíola, bíonn baint acu seo le leibhéil fuinnimh i samhail laitíse insuimeálaithe. Ach in ainneoin na gcéadta foilseacháin faoin ábhar, níl radhairc fós ar réiteach iomlán. Is dócha gur ghá struchtúr nua matamaiticiúil a aimsiú le haghaidh córais de mhéid teoranta a ghinearálann siméadracht Yang de chórais a leanann go héigríochtach.



When the size of a compactified integrable system tends to zero, one often finds a conformally invariant theory. The group observed that the generalised Yangian symmetry should survive in this limit. This led to a precise mathematical conjecture relating algebraic K-theory and modular forms. In collaboration with Don Zagier, director of the Max Planck Institute for Mathematics at Bonn, this idea passed extensive testing in 2006. (Zagier now refers to it as Nahm's conjecture.) The work is due to be published in *Frontiers in Number Theory, Physics and Geometry* (Springer, 2007).

A particular class of examples was studied with a Ph.D. student (Sinead Keegan) in which the relation with Yangian representation theory is manifest. As conjectured by Kirillov and Reshetikhin, it was shown that the variables of the theory can be written as characters of irreducible representations of Yangians based on D-type Lie algebras. The expected number of solutions was found for which all variables become rational linear combinations of roots of unity, and it was proved that there are no other solutions.

The group also continued research on Mayan history. A paper on the longest inscription at the important Maya city of Yaxchilan was published. This inscription is of great historical importance, but large parts of it are heavily eroded or even completely destroyed. Moreover, a few stone blocks have been scrambled. In 1997 it had been shown that the highly structured nature of the text allows a decipherment of most of the inscription, but Simon Martin later pointed out that one particular irregularity in the text had been overlooked. Based on this discovery Professor Nahm could make much further progress. This concerns the completion of the list of kings, the reconstruction of the chronology of the site, with dates for several of its rulers, and the reconstruction of the events in an interregnum period of ten years.

Nuair a chlaonann méid chórais insuimeálaithe dlúithe i dtreo nialais, faightear go minic teoiric chomhlíonach dho-athraitheach. Thug an grúpa faoi deara gur chóir go mairfeadh siméadracht ginearálta Yang sa teorainn seo. As seo d'eascair tuairimíocht chruinn mhatamaiticiúil a bhaineann le K-teoiric ailgéabrach agus foirmeacha modúlacha. I gcomhar le Don Zagier, Stiúrthóir Institiúid Mhatamaitice Max Planck, Bonn, d'éirigh leis an smaoineamh seo an-chuid trialacha a sheasamh i 2006. (Tagraíonn Zagier dó anois mar mheath-thuairim Nahm.) Foilseofar an obair in *Frontiers in Number Theory, Physics and Geometry* (Springer, 2007).

I gcomhar le mac léinn Ph.D. (Sinead Keegan), scrúdaíodh aicme faoi leith inar léir an gaol le teoiric léiriúcháin Yang. Ag teacht le meath-thuairimíocht Kirillov agus Reshetikhin, léiríodh gur féidir athróga na teoirice a scríobh i gcarachtar de léiriúcháin dolaghdaithe de Yangian bunaithe ar ailgéabracha D-chineálacha Lie. Thangthas ar líon ionchais na réiteach ag a n-iompraíonn na hathróga go léir ina dteaglamaí líneach cóimheasta de phréamhacha aontachta, agus cruthaíodh nach bhfuil réitigh eile ar bith ann.

Lean an grúpa lena gcuid taighde ar stair na Maya. Foilsíodh páipéar ar an inscríbhinn is faide ag an gcathair thábhachtach Maya, Yaxchilan. Inscríbhinn fhíortábhachtach stairiúil atá ann ach tá píosaí móra di creimthe, nó fiú loite go hiomlán. Anuas ar sin, tá roinnt bloc cloiche trína chéile. Léiríodh i 1997 go n-éascaíonn tréithe ardstruchtúrtha an téacs leis an chuid is mó den inscríbhinn a dhíchódú, ach níos déanaí, chuir Simon Martin ar shúile do dhaoine go ndearnadh neamhaird de ghné neamhrialta faoi leith den téacs. Bunaithe ar an eolas seo, bhí an tOllamh Nahm in ann an-dul chun cinn a dhéanamh. I gceist anseo tá críochnú liosta na ríthe, athdhéanamh chroineolaíocht an tsuímh, le dátaí do roinnt de na rialtóirí, agus athdhéanamh ar na himeachtaí i rith idir-ríochta dheich mbliana.

ADMINISTRATION AND FINANCE
RIARACHÁN AGUS AIRGEADAS

The services provided by central administration staff include secretarial support to Council, individual School Boards and associated Committees, Human Resources, General governance/compliance, Public Relations, Accommodation and Maintenance, Health and Safety.

Strategy Statement

The Institute commenced a review of its activities in order to prepare a strategy statement covering the period 2007-2010 inclusive. It is expected that this will be published in early 2007.

Accommodation

During the year the Institute acquired additional storage facilities at Fenian Street. Progress was also made in finalising the acquisition of further office accommodation from the Office of Public Works.

A review of the options for locating the Institute on a single site was carried out. Various proposals were considered by Council at its meeting in November and it was agreed that a recommendation would be developed and forwarded to the Department of Education and Science.

Staffing

In December the Institute welcomed two former members of staff from ITÉ who joined under a redeployment arrangement.

Pension Scheme

Agreement was reached on the admission of Exchequer Funded contract staff to the Institute's Pension Scheme.

Áirítear tacaíocht rúnaíochta don Chomhairle, do Bhoird Scoile aonair agus do na Coistí a bhaineann leo sin, d'Achmhainní Daonna, do Rialachas Ginearálta/Comhlíonadh, do Chaidreamh Poiblí, do Chóiríocht agus Cothabháil, do Shláinte agus Sábháilteacht, ar na seirbhísí a chuireann an fhoireann riaracháin ar fáil.

Ráiteas Straitéise

Chuir an Institiúid tús le hathbhreithniú ar a cuid gníomhaíochtaí d'fhonn ráiteas straitéise a ullmhú don tréimhse 2007-2010, araon san áireamh. Táthar ag súil lena fhoilsiú go luath i 2007.

Cóiríocht

Fuair an Institiúid saoráidí stórála bhreise i Sráid na bhFíníní i rith na bliana. Rinneadh dul chun cinn freisin maidir le tabhairt chun críche cóiríocht oifige bhreise a fháil ó Oifig na nOibreacha Poiblí.

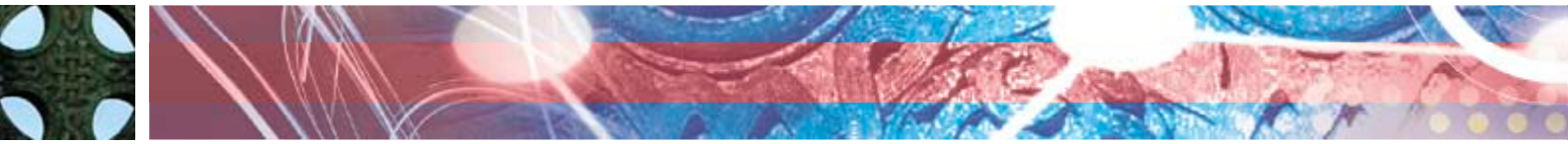
Rinneadh athbhreithniú ar na roghanna i gcás lonnú na hInstitiúide ar aon láithreán amháin. Bhreathnaigh an Chomhairle ar thograí éagsúla ag cruinniú na Comhairle i mí na Samhna agus aontaíodh go ndéanfaí moladh a fhorbairt agus é a chur ar aghaidh go dtí an Roinn Oideachais agus Eolaíochta.

An Fhoireann

I mí na Nollag, d'fháiltigh an Institiúid roimh bheirt iar-bhall d'ITÉ a tháinig chugainn faoi shocrú athchóirithe fostaíochta.

Scéim Pinsean

Thángthas ar chomhaontú maidir le baill foirne ar chonradh atá maoinithe as an Státchiste a ligint isteach i Scéim Pinsean na hInstitiúide.



Freedom of Information Act

The Institute came within the terms of the Act with effect from May 2006 and established the necessary structures.

The attached financial statements report a surplus of €16,570 for the year. This compares with a surplus of €242,730 in the year to 31 December 2005. Total income for the Institute increased from €10,310,410 in 2005 after adjusting for pensions to €11,306,748 for 2006. This represents an improvement of €996,338 or 9.66 % and the main increases arose in Oireachtas income and projects. The respective increases were €374,000 and €378,304.

The Institute's total costs, after adjusting for the transfer to the capital reserves, also increased from €10,067,680 in 2005 to €11,290,178 in 2006, i.e. an increase of €1,222,498 or 12.14%.

The significant movements in costs took place in payroll, pensions and projects where the respective increases of €315,576, €350,988 and €295,510 arose.

In 2006 the Institute invested in catalyst switches, a new digital camera and replacement seismic data recorders.

An tAct um Shaoráil Faisnéise

Tháinig an Institiúid faoi théarmaí an Achta le héifeacht ó mhí na Bealtaine agus bhunaigh sí na struchtúir riachtanacha.

Tuairiscíonn na ráitis airgeadais atá faoi iamh barrachas de €16,570 don bhliain. Sin i gcomparáid le easnamh de €242,730 sa bhliain go dtí 31ú Nollaig 2005. Tháinig ardú ar ioncam iomlán na hInstitiúide ó €10,310,410 i 2005 tar éis coigeartaithe do phinsin go dtí €11,306,748 do 2006. Léiríonn sé seo feabhas de €996,338 nó 9.66 % agus tharla na príomharduithe in ioncam Oireachtais agus tionscadail. Ba iad na harduithe faoi seach ná €374,000 agus €378,304.

Tháinig ardú ar chostais iomlána na hInstitiúide freisin, tar éis coigeartaithe don aistriú chuig an gcúlchiste caipitil ó €10,067,680 i 2005 go dtí €11,290,178 i 2006, i.e. ardú de €1,222,498 nó 12.14%.

Tharla na gluaiseachtaí suntasacha i gcostais i bpárolla, i bpinsin, in áitribh, i gcothabháil agus breosla/solas/cumhacht áit ar tharla na harduithe faoi seach de €315,576, €350,988 agus €295,510 chun cinn.

Sa bhliain 2006 rinne an Institiúid infheistiú ar lasca catalyst, ar cheamara digiteach nua agus ar thaifeadáin sonraí seismeacha ionaid.

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AN FHOIREANN

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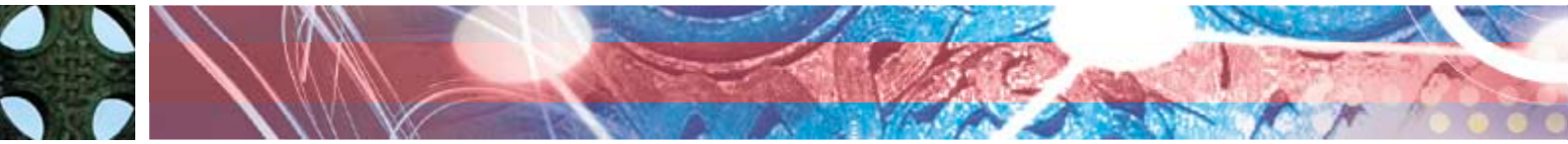
L. Hanlon
M. Fowler



Administrative Staff of the Institute 2006

Registrar
Cecil Keaveney

Finance Officer
Grace Forkin

Senior Administrative Officer
Mary Burke

Assistant Finance Officer
Ronan Byrne

Clerks
Tony Broderick
Noreen Granahan
Margaret Loughman
Helena Moynihan

Principal Administrator
Maire Seoighe (from 19 December)

Senior Administrator
Micheál Ó Gliasáin (from 15 December)

Temporary Administrative Staff
Edmond Barrett
Ruth Graham (to 6 October)
Mary Brennan (from 18 January)

Support Staff
Nuala Carney
Geraldine Casey
Roger Jones
Barbara Judge
Patricia McDonald
Michael Quinn
Collette Doyle
Tomás O Griofa

Staff and Scholars of the School of Celtic Studies 2006

Senior Professors
L. Breatnach (Director)
F. Kelly
M. Ó Murchú (to 12 November)
P. Breatnach (from 5 December)

Professors
M. McKenna
P. Ó Macháin

Assistant Professors
A. Nic Dhonnchadha
M. O Riordan
B. Ó Curnáin

Assistant Librarians
C. Dillon (temporary) (to 10 November)
M. Kelly (from 13 November)

Library Assistant
Ó. Ní Chanainn

School Administrator
E. Nic Dhonncha

Technical Staff
ISOS
A.M. O'Brien

IT Support
A. McCarthy (part-time)
S. McCullagh (part-time)

Bibliographer
A. Guilarte (contract)

Bergin Fellow
R. McLaughlin
C. Downey (from 1 August)

Scholars
N. Evans (England) (to 30 September)
J. Ní Ghrádaigh (Ireland) (to 30 September)
E. O Raghallaigh (Ireland)
B. Miles (Canada)
N. White (Ireland) (from 1 October)
G. Ó Riain (Ireland) (from 1 October)

Temporary Support Staff
B. Ní Bheagain (7 June to 31 December)

Professor Emeritus
M. Ó Murchú (from 13 November)

Staff School of Theoretical Physics 2006

Senior Professors
T.C. Dorlas (Director)
D.J. O'Connor
W. Nahm

Librarian
A. Goldsmith

School Administrator*
M. Matthews

Systems Administrator
A Jimenez (temporary)

** Title for M. Matthews was incorrect in previous Annual Reports.*

Post-Doctoral Scholars
S. Adams (Germany) (to 30 November)
M. Leitner (Germany)
C. Sämann (Germany) (from 1 June)

Pre-Doctoral Scholars
I. Huet Hernandez (Mexico) (to 31 December)
C. Morgan (Ireland) (from 1 May)
A. Ghesquiere (France) (from 1 May)

Schroedinger Fellow
O. Lisovyy (Ukraine) (to 11 September)
A. Povolotsky (Russia) (from 12 January)
C. Romelsberger (Germany) (from 1 November)

Project Staff
M. Panero (Italy) *"Quantum Field Theory from Matrix Models: An Alternative to Lattice Field Theory"* (to 19 November)

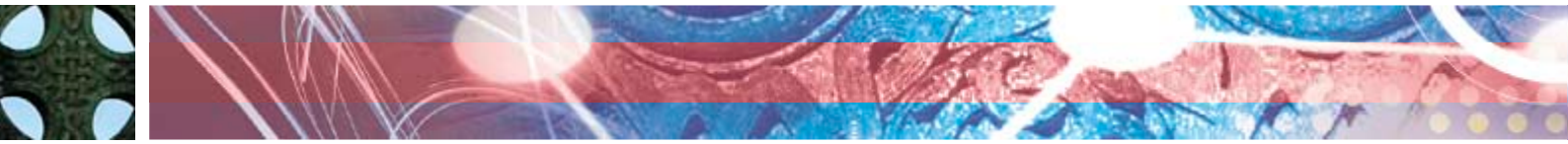
Embark Initiative Postdoctoral Research Fellow
S. Kurkcuoglu (Turkey) *"Aspects of Field Theories on Fuzzy and Non-commutative Spaces"* (to 19 October)

S. Bal (India) *"Dynamical Generation of space time and gauge group"*.

O. Rosten (U.K.) *"Aspects of N=4 Super Yang Mills"* (from 2 October)

F. Dolan (Ireland) *"Manifestly Guage Invarient QCD"* (from 2 October)

Embark Initiative Postgraduate Research Scholar
S. Ní Chiagáin (Ireland)
S. Murray (Ireland)



Staff School of Cosmic Physics 2006

Senior Professors

A. Jones (Director)
L. Drury
E. Meurs

Professors

T. Ray
F. Aharonian (from 15 November)

Assistant Professors

B. O'Reilly
P. Readman

Fellows

C. del Burgo (Spain)
X. Garcia (Spain)
A. Lim (England)

Experimental Officers

T. Blake
S. Dudzinski (contract)

Senior Technical Assistants

C. Horan
M. Smyth
G. Wallace

Technical Assistants

E. Flood
A. Grace
H. O'Donnell
L. Collins
J. Spratt (contract)

IT Technician

J Allman (contract) (to 27 October)

Clerical Staff

A. Byrne
E. Clifton (to 20 July)
P. Daly
C. Woods (contract)

Scholars

A. Avdeeva (Russia)
A. Chabert (France)
C. Combet (France) (to 30 June)
V.C. Do (Vietnam) (to 30 September)
Á. Gras Velázquez (Spain) (to 31 March)
M. Hamilton (South Africa)
C. Melody (Ireland)
M. Moorkamp (Germany)
G. Murphy (Ireland) (to 15 September)
J. Sheehan (Ireland)
P. Ward (Ireland)
M. Miensopust (Germany)
S. Vergani (Italy)
J. Mackey (Ireland) (from 1 October)

Project Staff

C.K. Rao (India) *"Deep-probing electromagnetic studies of the lithosphere across the Iapetus suture"* (to 30 April)

R. Curran SFI project
M. Muller SFI project (from 1 February)
F. Hauser PIMS (from 1 March)
E. Whelan JETSET
F. de Colle JETSET
J. Gracia JETSET (from 3 July)

CosmoGrid

Project Scientist
T. Lery

Cluster Manager
D. Golden

Project Administrator
A. Shaw

Post-Doctoral Researchers
D. Avdeev (to 22 March)
D. Froebrich (to 30 September)
S. Leygnac
S. Wang
T. Yamasaki

Professores Emeriti

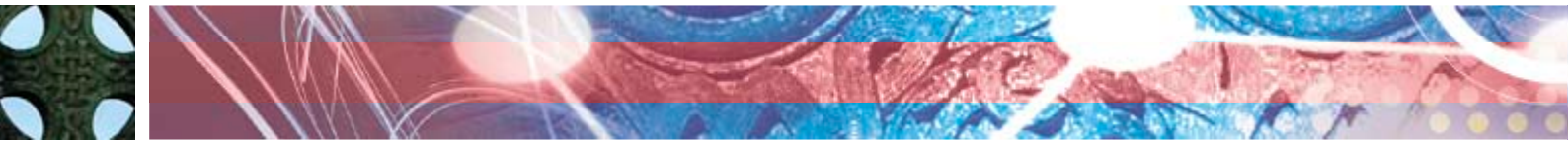
T. Kiang
A. Thompson
D. O'Sullivan
I. Elliott

Vacation Students

Conor Farrell (24 April to 21 July)
Diarmuid Bourke (from 22 June to 15 September)

Temporary Support Staff

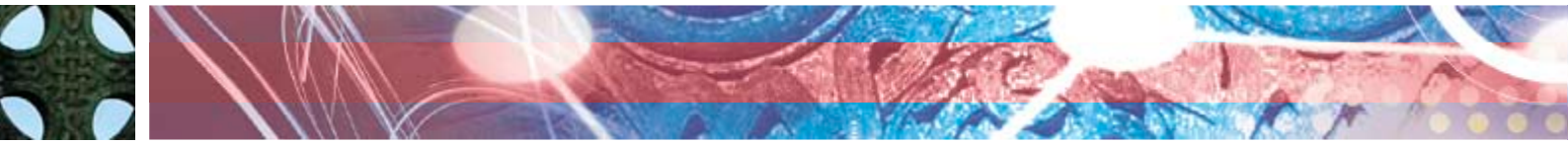
Carol Beigneux (to 30 April)



FINANCIAL STATEMENTS
for year ended 31 December 2006

Contents

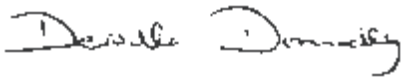
STATEMENT OF RESPONSIBILITIES OF THE COUNCIL



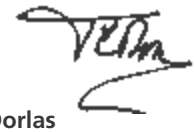
The Council of the Dublin Institute for Advanced Studies is required under section 28(2) of the Institute for Advanced Studies Act 1940 to prepare financial statements in such form as shall be approved by the Minister for Education & Science with the concurrence of the Minister for Finance. In preparing those financial statements the Council is required to:

- select suitable accounting policies and apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Institute will continue in operation; and
- disclose and explain any material departures from applicable accounting standards.

The Council is responsible for keeping proper books of account which disclose with reasonable accuracy at any time the financial position of the Institute and which enable it to ensure that the financial statements comply with Section 28(2) of the Act. The Council is responsible for safeguarding the assets of the Institute and for taking reasonable steps for the prevention and detection of fraud and other irregularities.



Dervilla Donnelly
Chairman – Council of the Institute



Tony Dorlas
Council Member

STATEMENT ON THE SYSTEM OF INTERNAL FINANCIAL CONTROL

Responsibility for system of Internal Financial Control

On behalf of the Council of the Institute I acknowledge our responsibility for ensuring that an effective system of internal financial control is maintained and operated.

The system can only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded, and that material errors or irregularities are either prevented or would be detected in a timely period.

Key Control Procedures

The Council has taken steps to ensure an appropriate control environment by:

- clearly defining management responsibilities;
- establishing formal procedures for reporting significant control failures and ensuring appropriate corrective action.

The Council has established processes to identify and evaluate business risks by:

- identifying the nature, extent and financial implication of risks facing the Institute including the extent and categories which it regards as acceptable;
- assessing the likelihood of identified risks occurring;
- assessing the Institute's ability to manage and mitigate the risks that do occur;
- assessing the costs of operating particular controls relative to the benefit obtained.

The system of internal financial control is based on a framework of regular management information, administrative procedures including segregation of duties, and a system of delegation and accountability.

In particular it includes:

- comprehensive budgeting system with an annual budget which is reviewed and agreed by the Council of the Institute;
- regular reviews by the Council of periodic and annual financial reports which indicate financial performance against forecasts;
- setting targets to measure financial and other performance;
- adherence to public procurement guidelines;
- regular reviews by the Council of external research projects.

The Audit Committee continues to review internal control matters and issues raised by the Comptroller and Auditor General and Internal Auditor. In 2006, the Audit Committee met on two occasions. In addition, the 2006 report on internal control systems as provided by the Internal Auditor has been made available to Members of Council.

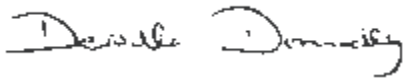
The Council's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal auditor, the Registrar and other officers within the Institute who have responsibility for the development and maintenance of an appropriate financial control framework and comments made by the Audit Committee and the Comptroller and Auditor General in his management letter or other reports.

STATEMENT ON THE SYSTEM OF INTERNAL FINANCIAL CONTROL [CONTINUED]

Annual Review of Controls

I confirm that in the year ended 31 December 2006 Council conducted a review of the effectiveness of the system of internal financial controls of the Institute.

Signed on behalf of the Council of the Institute



Dervilla Donnelly
Chairman – Council of the Institute

29 March 2007

ACCOUNTING POLICIES

General

The Institute was established under the Institute for Advanced Studies Act, 1940. Its functions include the provision of facilities for the furtherance of advanced studies and the conduct of research in specialised branches of knowledge. It comprises three Schools – Celtic Studies, Theoretical Physics and Cosmic Physics.

Accounting Policies

1 Basis of Accounting

The financial statements have been prepared on an accruals basis under the historical cost convention and in accordance with generally accepted accounting practice. Financial Reporting Standards recommended by the recognised accounting bodies are adopted as they become applicable.

2 Oireachtas Grants

Income is shown on a cash receivable basis.

3 Fixed Assets

Fixed Assets comprise the furniture, equipment, computers and motor vehicles of the Institute and are shown at cost less accumulated depreciation. The rates of depreciation, calculated on a straight line basis, are as follows:

Furniture and Equipment	10%
Computers	25%
Motor Vehicles	25%

Premises occupied by the Institute are leased from the Office of Public Works.

4 Capital Reserve

The capital reserve represents the unamortised value of income used for the purchase of Fixed Assets.

5 Library

Expenditure on library books and materials is written off in the year in which it is incurred.

6 Publications

Expenditure on publications is written off in the year in which it is incurred.

7 Superannuation

The Dublin Institute for Advanced Studies operates a defined benefit pension scheme which is funded annually on a pay as you go basis from monies available to it, including monies provided by the Department of Education and Science and from contributions deducted from staff salaries.

Pension costs reflect pension benefits earned by employees in the period and are shown net of staff pension contributions which are retained by the Dublin Institute for Advanced Studies. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge pension payments.

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Recognised Gains and Losses and a corresponding adjustment is recognised in the amount recoverable from the Department of Education and Science.

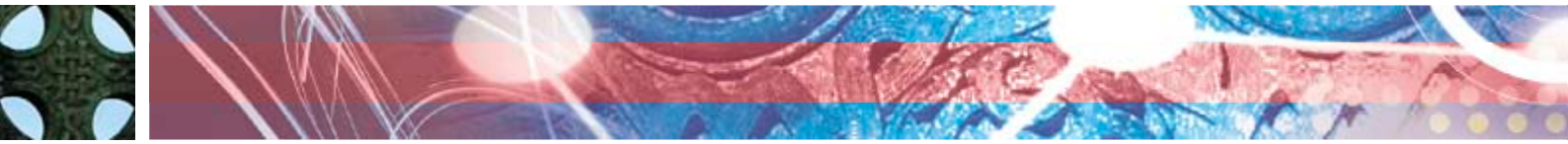
Pension liabilities represent the present value of future pension payments earned by staff to date. Deferred pension funding represents the corresponding asset to be recovered in future periods from the Department of Education and Science.

8 Projects

The Dublin Institute for Advanced Studies receives external funding from industry, government bodies and the European Commission. A chart of accounts is maintained for each project.

Income and expenditure on projects is reflected in the financial statements in the year to which they relate. A surplus or deficit on a project is reflected in the financial statements when realised.

INCOME AND EXPENDITURE ACCOUNT



	Notes	2006 €	2005 €
Income			
Oireachtas Grant		6,952,000	6,578,000
Net deferred funding for pensions	10.b	1,431,296	1,143,157
Sales of Publications		51,931	61,332
Projects	2	2,851,452	2,473,148
Other	3	20,069	54,773
		11,306,748	10,310,410
Transfer (to)/from Capital Reserve	5	(101,018)	108,247
		11,205,730	10,418,657
Expenditure	1		
School of Celtic Studies		1,472,665	1,380,170
School of Theoretical Physics		1,133,968	974,230
School of Cosmic Physics		4,585,163	4,252,069
Administration		3,997,364	3,569,458
		11,189,160	10,175,927
Surplus for year		**16,570**	**242,730**
Balance at 1 January		532,298	289,568
Balance at 31 December		**548,868**	**532,298**

		2006 €	2005 €
Statement of Recognised Gains and Losses			
Surplus for the year		16,570	242,730
Experience losses/(gains) on pension scheme liabilities		(3,627,000)	830,000
Changes in assumptions underlying the present value of pension scheme liabilities		2,961,000	(5,483,000)
Actuarial gain on Pension Liabilities	10.e	**(666,000)**	**(4,653,000)**
Adjustment to Deferred Pension Funding		**666,000**	**4,653,000**
Total recognised gain for the year		**16,570**	**242,730**

The Statement of Accounting Policies and notes 1 to 13 form part of these financial statements.

Dervilla Donnelly
Chairman – Council of the Institute

Tony Dorlas
Council Member

BALANCE SHEET

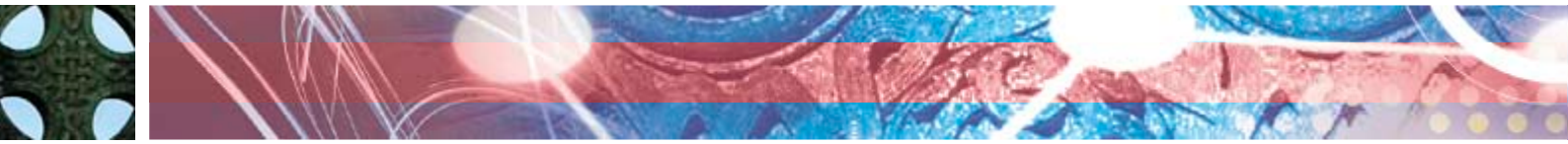
	Notes	2006 €	2005 €
Assets			
Fixed Assets	4	944,126	843,108
Current Assets:			
Cash on Hand and at Bank		4,014,385	3,027,863
Debtors and Prepayments		269,637	215,200
Total Assets		**5,228,148**	**4,086,171**
Less Liabilities			
Creditors – Amounts falling due within one year			
Creditors and Accruals		449,716	393,380
Projects	2	3,228,222	2,261,064
Creditors – Amounts falling due after one year	6	57,216	56,321
Total Liabilities Before Pensions		**3,735,154**	**2,710,765**
Assets Less Liabilities Before Pensions		**1,492,994**	**1,375,406**
Deferred Pension funding	10.d	32,964,000	30,868,000
Pension Liabilities	10.e	(32,964,000)	(30,868,000)
		0	**0**
Net Assets		**1,492,994**	**1,375,406**
Financed by			
Income and Expenditure Account		548,868	532,298
Capital Reserve	5	944,126	843,108
		1,492,994	**1,375,406**

The Statement of Accounting Policies and notes 1 to 13 form part of these financial statements.

Dervilla Donnelly
Chairman – Council of the Institute

Tony Dorlas
Council Member

CASH FLOW STATEMENT



	Notes	2006 €	2005 €
Reconciliation of operating surplus to net cash inflow from operating activities			
Surplus for year		**16,570**	**242,730**
Interest received	3	(17,288)	(24,251)
Increase/(Decrease) in Creditors		57,232	(61,628)
Increase in Debtors		(54,438)	(2,786)
Net Increase in Research Programmes and Fees		967,158	577,554
Depreciation	4	275,888	274,789
Capital Reserve Transfer	5	101,018	(108,247)
Loss on disposal		–	21,645
Net Cash Inflow from operating activities		1,346,140	919,806
Cash Flow Statement			
Net Cash Inflow from operating activities		1,346,140	919,806
Returns on investments and servicing of finance			
Bank Interest Received	3	17,288	24,251
Capital expenditure			
Purchase of Tangible Assets	4	(376,906)	(188,187)
Increase in Cash		**986,522**	**755,870**
Reconciliation of net cash flow to movement in net funds			
Increase in Cash		986,522	755,870
Net Funds at 1 January		3,027,863	2,271,993
Net Funds at 31 December		**4,014,385**	**3,027,863**

Analysis of change in net (debt)/funds

	Cash at bank and in hand €	Bank Overdraft €	Total €
At beginning of year 2006	3,027,863	–	3,027,863
Cash flows	986,522	–	986,522
At end of year 2006	**4,014,385**	**–**	**4,014,385**

The Statement of Accounting Policies and notes 1 to 13 form part of these financial statements.

Dervilla Donnelly
Chairman – Council of the Institute

Tony Dorlas
Council Member

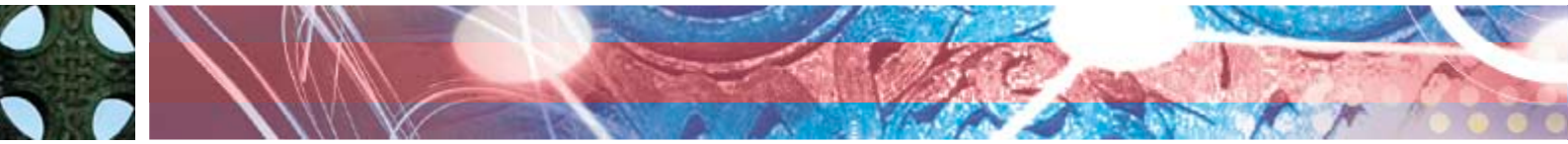
NOTES TO THE FINANCIAL STATEMENTS

1 DETAILED ANALYSIS OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31/12/2006

	Notes	School of Celtic Studies €	School of Theoretical Physics €	School of Cosmic Physics €	Adminis-tration €	2006 Total €	2005 Total €
Income							
Oireachtas Grants		1,590,350	1,063,298	2,390,037	1,908,315	6,952,000	6,578,000
Net deferred funding for pensions	10.b	(219,011)	(69,162)	(562,584)	2,282,053	1,431,296	1,143,157
Sales of Publications		51,891	–	40	–	51,931	61,332
Project Income	2	1,708	140,173	2,682,350	27,221	2,851,452	2,473,148
Other Income	3	–	269	500	19,300	20,069	54,773
		1,424,938	1,134,578	4,510,343	4,236,889	11,306,748	10,310,410
Transfer (to)/from Capital Reserve		–	–	–	(101,018)	(101,018)	108,247
		1,424,938	1,134,578	4,510,343	4,135,871	11,205,730	10,418,657
Expenditure							
Payroll Costs	7	1,301,352	867,830	1,761,373	674,543	4,605,098	4,289,522
Pension costs	10.c	(30,993)	(29,522)	(27,016)	2,324,578	2,237,047	1,886,059
Project Costs	2	1,708	140,169	2,586,159	–	2,728,036	2,432,526
Library and Book Storage		38,166	93,373	70,439	15,262	217,240	221,432
Depreciation	4	–	–	–	275,888	275,888	274,789
Rent, Rates and Insurance		–	–	–	113,526	113,526	120,551
General Expenses	8	12,378	8,860	40,876	164,076	226,190	197,577
Travel and Seminar Expenses		30,189	28,034	72,245	8,905	139,373	111,518
Premises Maintenance and Security		497	–	7,183	143,308	150,988	206,990
Computer and Internet expenses		4,519	18,397	58,508	59,356	140,780	105,076
Fuel Light and Power		–	–	–	100,829	100,829	93,501
Postage and Telephone		–	–	–	51,134	51,134	57,640
Stationery		12,740	183	6,122	45,809	64,854	62,141
Publications		100,507	4,272	1,488	–	106,267	53,128
Advertising		–	182	–	14,560	14,742	19,525
Minor Office Equipment		1,602	2,190	7,786	5,590	17,168	22,307
Loss on Disposal		–	–	–	–	–	21,645
		1,472,665	1,133,968	4,585,163	3,997,364	11,189,160	10,175,927

NOTES TO THE FINANCIAL STATEMENTS

[CONTINUED]



1 DETAILED ANALYSIS OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31/12/2006 [CONTINUED]

	Notes	School of Celtic Studies €	School of Theoretical Physics €	School of Cosmic Physics €	Adminis-tration €	2006 Total €	2005 Total €
Surplus/ (Deficit) for year		**(47,727)**	**610**	**(74,820)**	**138,507**	**16,570**	**242,730**
Balance at 1 January before reallocation		463,881	141,874	305,073	(378,530)	532,298	289,568
Reallocation*		(173,492)	(38,763)	(493,832)	706,087	–	–
Balance at 1 January after reallocation		290,389	103,111	(188,759)	327,557	532,298	–
Balance at 31 December before reallocation		416,154	142,484	230,253	(240,023)	548,868	532,298
Balance at 31 December after reallocation		**242,662**	**103,721**	**(263,579)**	**466,064**	**548,868**	**–**

** Note: In 2005 net pension cost was reflected under administration. A reallocation has occurred in 2006 to present net pension cost across schools and sections.*

2 PROJECTS

	2006 €	2005 €
Opening Balances	2,261,064	1,683,510
Receipts	3,818,610	3,050,702
	6,079,674	4,734,212
Closing Balances	(3,228,222)	(2,261,064)
Applied as Income	2,851,452	2,473,148
Income Allocation		
School of Celtic Studies	1,708	3,982
School of Theoretical Physics	140,173	118,164
School of Cosmic Physics	2,682,350	2,310,380
	2,824,231	2,432,526
Administration	27,221	40,622
Total Project Income	**2,851,452**	**2,473,148**

2 PROJECTS [CONTINUED]

Project Costs

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	2006 Total €	2005 Total €
Payments to Partners/Associates	–	1,340	1,726,805	1,728,145	1,510,809
Salaries/Scholarships	–	126,096	684,229	810,325	719,737
Travel	–	8,387	117,911	126,298	112,297
Other	1,708	4,346	57,214	63,268	89,683
Total Project Costs	**1,708**	**140,169**	**2,586,159**	**2,728,036**	**2,432,526**

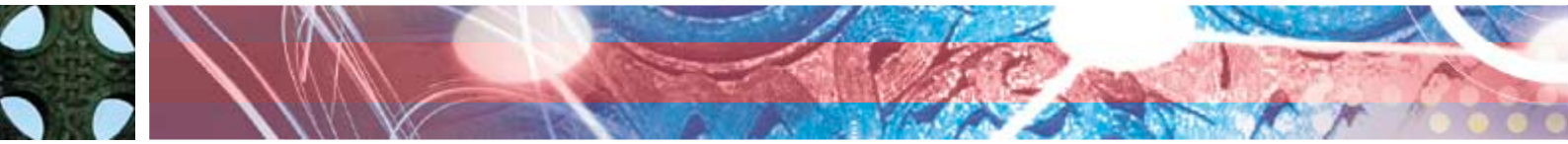
3 OTHER INCOME

	2006 €	2005 €
Bank interest	17,288	24,251
Fees & grants	500	561
Other	2,281	29,961
Total	20,069	54,773

4 FIXED ASSETS

	Furniture & Equipment €	Motor Vehicles €	Computers €	Total €
Cost				
Opening Balance 1/1/2006	1,906,818	50,235	1,097,454	3,054,507
Additions	242,404	9,250	125,252	376,906
Disposals	–	(6,285)	(8,480)	(14,765)
	2,149,222	53,200	1,214,226	3,416,648
Depreciation				
Opening Balance 1/1/2006	1,409,628	6,315	795,456	2,211,399
Charge 2006	97,398	12,556	165,934	275,888
Disposals	–	(6,285)	(8,480)	(14,765)
	1,507,026	12,586	952,910	2,472,522
Net book value 31/12/2006	642,196	40,614	261,316	944,126
Net book value 31/12/2005	497,190	43,920	301,998	843,108

NOTES TO THE FINANCIAL STATEMENTS
[CONTINUED]



5 CAPITAL RESERVE

	2006 €	2005 €
Balance at 1 January	843,108	951,355
Transfer from/(to) Income and Expenditure Account		
Income allocated to acquire fixed assets	376,906	188,187
Amortisation in line with asset depreciation	(275,888)	(274,789)
Amount released on disposals	–	(21,645)
	101,018	(108,247)
Balance at 31 December	**944,126**	**843,108**

6 CREDITORS DUE AFTER TWELVE MONTHS

	2006 €	2005 €
These comprise:		
Vernam Hull Bequest	54,803	53,910
Carmody Fund	2,413	2,411
	57,216	**56,321**

The funds relating to the above are held on deposit. No amounts were utilised during the year.

7 PAYROLL COSTS

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	Admin. €	2006 Total €	2005 Total €
Salaries/Wages	1,196,799	689,099	1,566,310	674,543	4,126,751	3,791,964
Scholarships	84,097	70,118	137,460	–	291,675	299,300
Visitors	19,056	107,613	57,603	–	184,272	191,925
Honoraria	1,400	1,000	–	–	2,400	6,333
	1,301,352	867,830	1,761,373	674,543	4,605,098	4,289,522

8 GENERAL EXPENSES

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	Admin. €	2006 Total €	2005 Total €
Miscellaneous	7,378	4,735	23,179	45,863	81,155	69,789
Promotions/Lunches	4,701	4,125	9,274	2,825	20,925	28,855
Professional Fees	–	–	–	79,851	79,851	39,235
Training	215	–	8,253	8,902	17,370	34,614
Audit Fee	–	–	–	16,750	16,750	15,800
Bank Charges	–	–	–	3,317	3,317	3,788
Health & Safety	84	–	170	6,568	6,822	5,496
	12,378	8,860	40,876	164,076	226,190	197,577

9 LEASING

Operating Leases

The premises occupied by the Institute are leased from the Office of Public Works.

The commitment on foot of such leases in respect of 2007 is €55,519.

10 SUPERANNUATION

a) Pension Scheme

The Board operates a defined benefit superannuation scheme for its employees. The valuation used for FRS17 has been based on a full actuarial valuation updated to 31 December 2006 by a qualified independent actuary to take account of the requirements of FRS17 in order to assess the scheme liabilities at 31 December 2006.

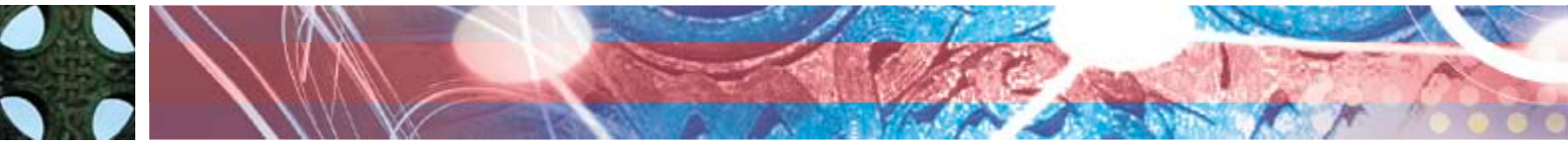
The financial assumptions used to calculate the components of the defined benefit cost for the year ended 31 December 2006 were as follows:

	At 31/12/06	At 31/12/05	At 31/12/04
Discount Rate	4.60%	4.70%	5.25%
Inflation Rate	2.25%	2.25%	2.25%
Rate of Salary Increases	4.00%	4.00%	4.00%
Rate of Pension Increases	4.00%	4.00%	4.00%

b) Net Deferred Funding for Pensions in year

	2006 €'000	2005 €'000
Funding recoverable in respect of current year pension costs	2,340	1,975
State Grant applied to pay pensioners	(909)	(832)
	1,431	1,143

NOTES TO THE FINANCIAL STATEMENTS
[CONTINUED]



10 SUPERANNUATION [CONTINUED]

c) Analysis of total pension costs charged to Expenditure

	2006 €'000	2005 €'000
Current service cost	1,071	780
Interest on Pension Scheme Liabilities	1,269	1,195
Employee Contributions	(103)	(89)
	2,237	1,886

d) Deferred Funding Asset for Pensions

DIAS recognises these amounts as an asset corresponding to the unfunded deferred liability for pensions on the basis of a number of past events. These events include the statutory basis for the establishment of the superannuation scheme, and the policy and practice in relation to funding public service pensions including contributions by employees and the annual estimates process. While there is no formal agreement regarding these specific amounts with the Department of Education and Science, the DIAS has no evidence that this funding policy will not continue to meet this amount in accordance with current practice.

The deferred funding asset for pensions as at 31 December 2006 amounted to €33 million (2005: €31 million).

e) Movement in Net Pension Liability during the financial year

	2006 €'000	2005 €'000
Net Pension Liability at 1 January	(30,868)	(25,072)
Current Service Cost	(1,071)	(780)
Interest Costs	(1,269)	(1,195)
Actuarial gain	(666)	(4,653)
Pensions paid in the year	910	832
Net Pension Liability at 31 December	(32,964)	(30,868)

f) History of experience gains and losses

	2006 €'000	2005 €'000	2004 €'000
Experience (gains)/losses on scheme liabilities	(3,627)	830	975
Percentage of the present value of scheme liabilities	(11.00%)	2.69%	3.89%
Total Amount recognised in Statement of total recognised gains and losses	666	4,653	1,199
Percentage of the present value of scheme liabilities	2.02%	15.07%	4.78%

11 DISCLOSURE OF TRANSACTIONS

The Council of the Institute adopts procedures in accordance with guidelines issued by the Department of Finance in relation to the disclosure of interests by Council Members and these procedures have been adhered to by the Council Members during the year. No Council Member has declared an interest.

12 CONTINGENT LIABILITIES

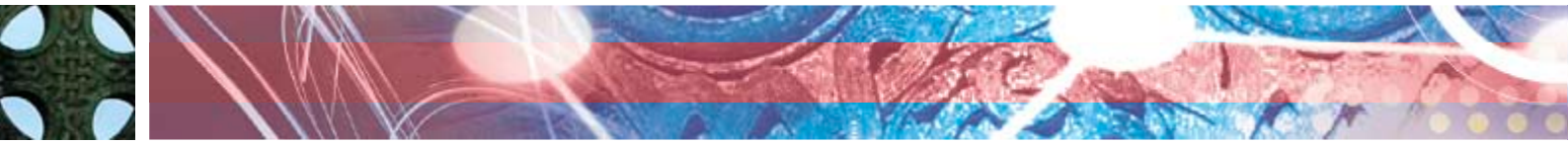
Legal proceedings against the Institute have been initiated by the former Registrar. It is not possible to anticipate the outcome of such proceedings nor their financial impact, if any.

13 APPROVAL OF ACCOUNTS

The Financial Statements were approved by Council on the 29 March 2007.

REPORT OF THE COMPTROLLER AND AUDITOR GENERAL

for presentation to the Houses of the Oireachtas



I have audited the financial statements of Dublin Institute for Advanced Studies for the year ended 31 December 2006 under the Institute for Advanced Studies Act, 1940.

The financial statements, which have been prepared under the accounting policies set out therein, comprise the Accounting Policies, the Income and Expenditure Account, the Balance Sheet, the Cash Flow Statement, the Statement of Total Recognised Gains and Losses and the related notes.

Respective Responsibilities of the Council and the Comptroller and Auditor General

The Council is responsible for preparing the financial statements in the form and manner provided under the Institute for Advanced Studies Act, 1940, and for ensuring the regularity of transactions. The Council prepares the financial statements in accordance with Generally Accepted Accounting Practice in Ireland. The accounting responsibilities of the Members of the Council are set out in the Statement of Responsibilities of the Council.

My responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

I report my opinion as to whether the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland. I also report whether in my opinion proper books of account have been kept. In addition, I state whether the financial statements are in agreement with the books of account.

I report any material instance where moneys have not been applied for the purposes intended or where the transactions do not conform to the authorities governing them.

I also report if I have not obtained all the information and explanations necessary for the purposes of my audit.

I review whether the Statement on Internal Financial Control reflects the Institute's compliance with the Code of Practice for the Governance of State Bodies and report any material instance where it does not do so, or if the statement is misleading or inconsistent with other information of which I am aware from my audit of the financial statements. I am not required to consider whether the Statement on Internal Financial Control covers all financial risks and controls, or to form an opinion on the effectiveness of the risk and control procedures.

Basis of Audit Opinion

In the exercise of my function as Comptroller and Auditor General, I conducted my audit of the financial statements in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board and by reference to the special considerations which attach to State bodies in relation to their management and operation. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures and regularity of the financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgments made in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Institute's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations that I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements.

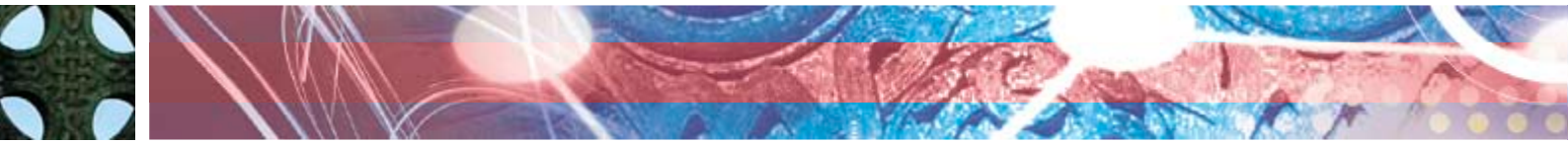
Opinion

In my opinion, the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland, of the state of the Institute's affairs at 31 December 2006 and of its income and expenditure for the year then ended.

In my opinion, proper books of account have been kept by the Institute. The financial statements are in agreement with the books of account.

Gerard Smyth
For and on behalf of the Comptroller and Auditor General

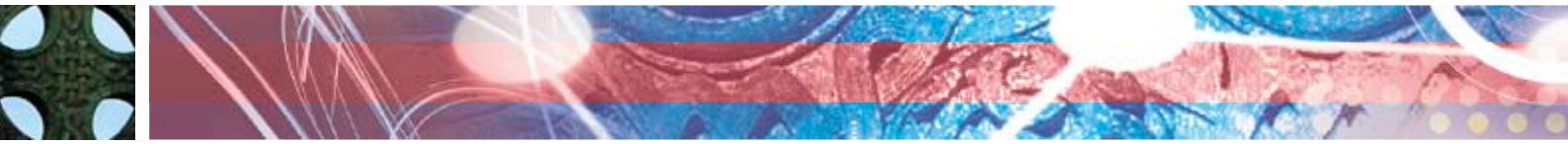
11 April 2007



RÁITIS AIRGEADAIS
don bhliain dár críoch 31 Nollaig 2006

Ábhar

RÁITEAS FREAGRACHTAÍ NA COMHAIRLE



Éilítear ar Chomhairle Institiúid Ard-Léinn Bhaile Átha Cliath faoi alt 28(2) den Acht um Institiúid Ard-Leighinn, 1940 ráitis airgeadais a ullmhú ar shlí a cheadóidh an tAire Oideachais & Eolaíochta le comhthoiliú an Aire Airgeadais. Agus an Chomhairle ag ullmhú na ráitis airgeadais sin éilítear uirthi:

- polasaithe cuntasaíochta oiriúnacha a roghnú agus iad a chur i bhfeidhm go comhleanúnach;
- breithiúnais agus meastacháin a dhéanamh atá réasúnach agus stuama;
- na ráitis airgeadais a ullmhú ar bhonn gnóthais leantach mura bhfuil sé míchuí glacadh leis go leanfaidh an Institiúid ag oibriú; agus
- aon imeacht ábhartha ó chaighdeáin chuntasaíochta infheidhme a nochtadh agus a mhíniú.

Tá freagracht ar an gComhairle leabhair chuntais chearta a choinneáil a nochtaíonn ag aon am le cruinneas réasúnach staid airgeadais na hInstitiúide agus a chuireann ar a cumas a chinntiú go gcloíonn na ráitis airgeadais le hAlt 28(2) den Acht. Tá freagracht ar an gComhairle sócmhainní na hInstitiúide a shlánú agus as céimeanna réasúnacha a ghlacadh le cosc a chur ar chalaois agus ar neamhrialtachtaí eile agus iad a aimsiú.

Dervilla Donnelly
Cathaoirleach – Comhairle Na hInstitiúide

Tony Dorlas
Comhalta den Comhairle

RÁITEAS FAOIN gCÓRAS RIALAITHE AIRGEADAIS INMHEÁNAIGH

Freagracht as an gCóras Rialaithe Airgeadais Inmheánaigh

Thar ceann Chomhairle na hInstitiúide is mian liom ár bhfreagracht a chur in iúl lena chinntiú go ndéantar cothabháil agus go n-oibrítear córas rialaithe airgeadais inmheánaigh.

Ní féidir leis an gcóras ach dearbhú réasúnach agus ní dearbhú críochnaitheach a chur ar fáil go ndéantar slánú ar shócmhainní, go mbíonn idirbheartaíochtaí údaraithe agus taifeadta i gceart, agus go gcuirtear cosc ar earráidí ábhartha nó ar neamhrialtachtaí nó go n-aimseofaí iad i dtréimhse chaoithiúil.

Nósanna Imeachta Rialaithe Lárnacha

Tá céimeanna glactha ag an gComhairle lena chinntiú go mbeidh timpeallacht rialaithe chuí i bhfeidhm trí:

- sainmhíniú soiléir a thabhairt maidir le freagrachtaí bainistíochta;
- nósanna imeachta foirmiúla a bhunú le teipeanna rialaithe suntasacha a thuairisciú agus lena chinntiú go dtógtar gníomh cuí leis an gceist a cheartú.

Tá próisis bunaithe ag an gComhairle le rioscaí gnó a aithint agus iad a luacháil trí:

- nádúr, méid agus tionchar airgeadais na rioscaí a bhíonn os comhair na hInstitiúide a aithint lena n-áirítear méid agus catagóir a mheasann an Institiúid a bheith inghlactha;
- measúnú a dhéanamh ar an dóchúlacht atá ann go dtarlóidh na rioscaí aitheanta;
- measúnú a dhéanamh ar chumas na hInstitiúide na rioscaí a tharlaíonn a bhainistiú agus a mhaolú;
- measúnú a dhéanamh ar na costais a bhaineann le rialacháin áirithe a oibriú a bhaineann leis an sochar a bhaintear amach.

Tá an córas rialaithe airgeadais inmheánaigh bunaithe ar chreat oibre eolais bainistíochta rialta, nósanna imeachta riaracháin lena n-áirítear dualgais a roinnt, agus córas toscaireachta agus cuntasachta.

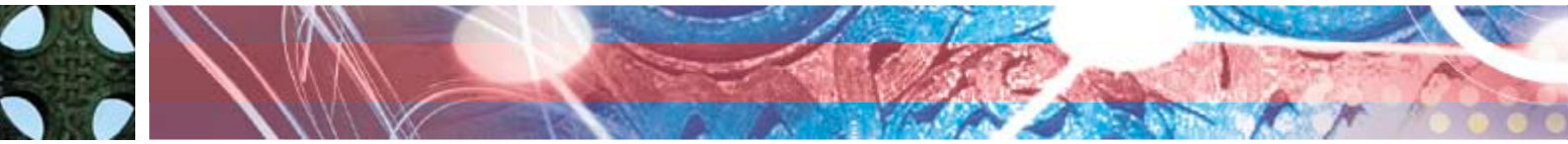
Áirítear leis go háirithe:

- córas buiséid cuimsitheach le buiséad bliantúil a ndéanann Comhairle na hInstitiúide athbhreithniú air agus a bhíonn comhaontaithe aici;
- athbhreithnithe rialta ag an gComhairle ar thuairiscí airgeadais tréimhseacha agus bliantúla a léiríonn feidhmíocht airgeadais in aghaidh réamhaisnéisí;
- spriocanna a leagan síos le feidhmíocht airgeadais agus feidhmíocht eile a thomhas;
- cloí le treoirlínte chun soláthar don earnáil phoiblí.
- athbhreithnithe rialta ag an gComhairle ar thionscadail taighde seachtaracha.

Lean an Coiste Iniúchta ag déanamh athbhreithniú (Tá an Coiste Iniúchta ag leanúint ag déanamh athbhreithniú) ar shaincheisteanna rialaithe inmheánaigh agus saincheisteanna a d'ardaigh an tArd-Reachtaire Cuntas agus Ciste. In 2006, bhuail an Coiste Iniúchta le chile trí huaire. Ina theannta sin, cuireadh tuarascáil an Reachtaire inmheánaigh ar chórais rialaithe inmheánaigh don bhliain 2006 ar fáil do bhaill na Comhairle.

Tá monatóireacht agus athbhreithniú na Comhairle ar éifeachtúlacht an chórais rialaithe airgeadais inmheánaigh coinnithe ar an eolas trí obair an iniúchóra inmheánaigh, trí obair an Chláraitheora agus oifigigh eile laistigh den Institiúid atá freagrach as creat oibre rialaithe airgeadais cuí a fhorbairt agus a chothabháil, agus trí thuairimí a dhéanann an Coiste Iniúchta agus an tArd-Reachtaire Cuntas agus Ciste ina litir bhainistíochta no i dtuairiscí eile.

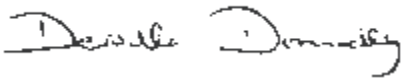
RÁITEAS FAOIN gCÓRAS RIALAITHE AIRGEADAIS INMHEÁNAIGH [AR LEAN]



Athbhreithniú Bliantúil ar Rialacháin

Dearbhaím go ndearna an Bord athbhreithniú ar éifeachtachas chórais rialaithe airgeadais inmhéanaigh na hInstitiúide sa bhliain dár críoch 31ú Nollaig 2006.

Sínithe thar ceann Chomhairle na hInstitiúide



Dervilla Donnelly
Cathaoirleach – Comhairle Na hInstitiúide

29 Márta 2007

POLASAITH CHUNTASAÍOCHTA

Ginearálta

Bunaíodh an Institiúid faoin Acht um Institiúid Ard-Leighinn, 1940. Áirítear ar a cuid feidhmeanna saoráidí a sholáthar le hard-léinn a chur chun cinn tuilleadh agus le taighde a dhéanamh i mbrainsí speisialtachta eolais.

Polasaithe Cuntasaíochta

1 Bunús Cuntasaíochta

Tá na ráitis airgeadais ullmhaithe ar bhonn fabhraithe faoin gcoinbhinsiún costais stairiúil agus de réir chleachtas cuntasaíochta a nglactar leo tríd is tríd. Glactar le Caighdeáin Thuairiscithe Airgeadais a bhí molta ag na comhlachtaí cuntasaíochta aitheanta mar is infheidhme iad.

2 Deontais Oireachtais

Taispeántar ioncam ar bhunús airgid isteach.

3 Sócmhainní Seasta

Is éard is Sócmhainní Seasta ann ná troscán, trealamh, ríomhairí agus mótarfheithiclí na hInstitiúide agus taispeántar iad ag costas lúide dímheas carntha. Is mar seo a leanas atá na rátaí dímheasa, ríofa ar bhunús dronlíneach:

Troscán agus Trealamh	10%
Ríomhairí	25%
Mótarfheithiclí	25%

Faightear áitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

4 Cúlchiste Caipitil

Léiríonn cúltaca caipitiúil luach neamh-amúchta ioncaim a úsáidtear le Sócmhainní Seasta a cheannach.

5 Leabharlann

Díscríobhtar caiteachas ar leabhair leabharlainne agus ábhair sa bhliain a dtabhaítear é.

6 Foilseacháin

Díscríobhtar caiteachas ar fhoilseacháin sa bhliain a dtabhaítear é.

7 Aoisliúntas

Feidhmíonn Institiúid Ard-Léinn Bhaile Átha Cliath scéim phinsin shochair shonraithe a mhaoinítear go bliantúil ar bhonn íoc mar a imíonn tú ó chistí atá ar fáil dó, lena n-áirítear cistí a chuireann an Roinn Oideachais agus Eolaíochta ar fáil agus ó ranníocaíochtaí a asbhaintear ó thuarastail foirne.

Léirionn costais phinsin na sochair phinsin a thuilleann fostaithe sa tréimhse agus léirítear iad glan ar ranníocaíochtaí pinsin foirne a bhíonn coinnithe ag Institiúid Ard-Léinn Bhaile Átha Cliath. Aithnítear suim a chomhfhreagraíonn don mhuirear pinsin mar ioncam sa mhéid go bhfuil sé inaisghabhála, go ndéantar é a fhritháireamh in aghaidh deontais a bhíonn faighte sa bhliain chun íocaíochtaí pinsin a ghlanadh.

Tá gnóthachain nó caillteanais achtúireacha ar dhliteanais na scéime léirithe sa Ráiteas ar Ghnóthachain agus Caillteanais Aitheanta agus aithnítear coigeartú comhfhreagrach sa mhéid is féidir a aisghabháil ón Roinn Oideachais agus Eolaíochta.

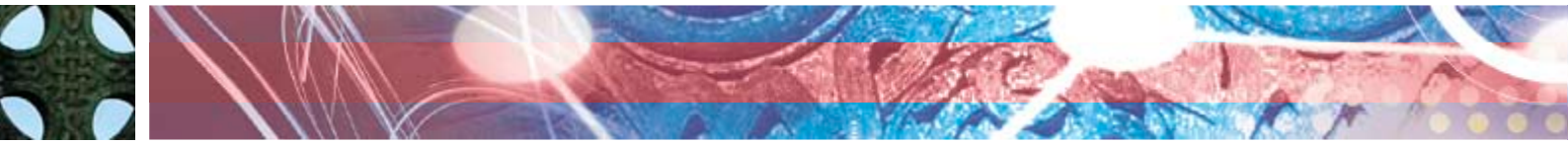
Léiríonn na dliteanais phinsin luach reatha na n-íocaíochtaí pinsin don todhchaí atá tuillte ag an bhfoireann go dtí seo. Léiríonn maoiniú pinsin iarchurtha an tsócmhainn chomhfhreagrach a bheidh aisghafa i dtréimhsí amach anseo ón Roinn Oideachais agus Eolaíochta.

8 Tionscadail

Faigheann Institiúid Ard-Léinn Bhaile Átha Cliath maoiniú seachtarach ó thionscal, ó chomhlachtaí rialtais, agus ó Choimisiún na hEorpa. Coinnítear cairt chuntais i gcás gach tionscadal.

Léirítear ioncam agus caiteachas ar thionscadail sna ráitis airgeadais sa bhliain lena mbaineann siad. Taispeántar barrachas nó easnamh tionscadail sna ráitis airgeadais nuair a léirítear sin.

CUNTAS IONCAIM AGUS CAITEACHAIS



	Nótaí	2006 €	2005 €
Ioncam			
Deontas Oireachtais		6,952,000	6,578,000
Glan-mhaoiniú iarchurtha do phinsin	10.b	1,431,296	1,143,157
Díolacháin Foilseachán		51,931	61,332
Tionscadail	2	2,851,452	2,473,148
Eile	3	20,069	54,773
		11,306,748	10,310,410
Aistriú (chuig)/ó Cúlchiste Caipitil	5	(101,018)	108,247
		11,205,730	10,418,657
Caiteachas	1		
Scoil an Léinn Cheiltigh		1,472,665	1,380,170
Scoil na Fisice Teoiriciúla		1,133,968	974,230
Scoil na Fisice Cosmaí		4,585,163	4,252,069
Riarachán		3,997,364	3,569,458
		11,189,160	10,175,927
Barraíocht don bhliain		**16,570**	**242,730**
Iarmhéid amhail an 1 Eanáir		532,298	289,568
Iarmhéid amhail an 31 Nollaig		**548,868**	**532,298**

		2006 €	2005 €
Ráiteas ar Ghnóthachain agus Caillteanais Aitheanta			
Barrachas don bhliain		16,570	242,730
Caillteanais/(gnóthachain) iarbhíre ar dhliteanais na scéime pinsin		(3,627,000)	830,000
Athruithe i dtoimhdí is bonn do luach reatha dhliteanais na scéime pinsin		2,961,000	(5,483,000)
Gnóthachan achtúireach ar Dhliteanais Phinsin	10.e	**(666,000)**	**(4,653,000)**
Coigeartú ar Mhaoiniú an Phinsin Iarchurtha		**666,000**	**4,653,000**
Gnóthachan iomlán aitheanta don bhliain		**16,570**	**242,730**

Is cuid de na ráitis airgeadais sin é an Ráiteas Beartais Cuntasaíochta agus nótaí 1 go dtí 13.

Dervilla Donnelly
Cathaoirleach – Comhairle na hInstitiúide

Tony Dorlas
Comhalta den Comhairle

CLÁR COMHARDAITHE

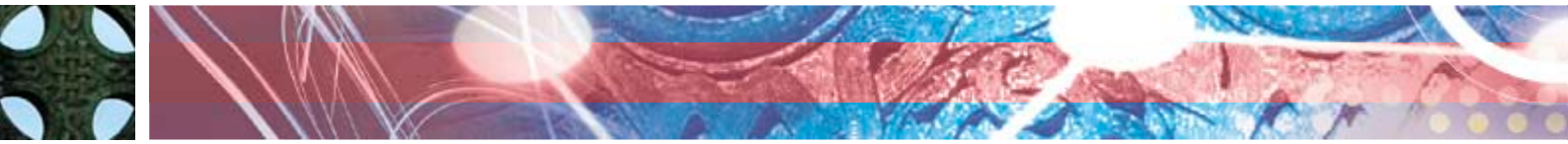
	Nótaí	2006 €	2005 €
Sócmhainní			
Sócmhainní Seasta	4	944,126	843,108
Sócmhainní Reatha:			
Airgead sa Lámh agus ag an mBanc		4,014,385	3,027,863
Féichiúnaithe agus Réamhíocaíochtaí		269,637	215,200
Sócmhainní Iomlána		**5,228,148**	**4,086,171**
Lúide Dliteanais			
Creidiúnaithe - Méideanna atá dlite laistigh de bhliain amháin			
Creidiúnaithe agus Fabhruithe		449,716	393,380
Tionscadail	2	3,228,222	2,261,064
Creidiúnaithe - méideanna atá dlite tar éis bliana amháin	6	57,216	56,321
Dliteanais Iomlána Roimh Phinsin		**3,735,154**	**2,710,765**
Sócmhainní (Glana) Rúide dliteanais Roimh Phinsin		**1,492,994**	**1,375,406**
Maoiniú an Phinsin Iarchurtha	10.d	32,964,000	30,868,000
Dliteanais Phinsin	10.e	(32,964,000)	(30,868,000)
		0	**0**
Sócmhainní Glana		**1,492,994**	**1,375,406**
Maoinithe ag			
Cuntas Ioncaim agus Caiteachais		548,868	532,298
Cúlchiste Caipitil	5	944,126	843,108
		1,492,994	**1,375,406**

Is cuid de na ráitis airgeadais seo é an Ráiteas Beartais Cuntasaíochta agus na nótaí ó 1 go dtí 13.

Dervilla Donnelly
Cathaoirleach – Comhairle na hInstitiúide

Tony Dorlas
Comhalta den Comhairle

RÁITEAS SREABHADH AIRGID



	Nótaí	2006 €	2005 €
Réiteach barrachais oibríochta chuig glan-insreabhadh airgid ó ghníomhaíochtaí oibríochta			
Barrachas don bhliain		**16,570**	**242,730**
Ús infhaighte	3	(17,288)	(24,251)
Ardú/(Laghdú) i gCreidiúnaithe		57,232	(61,628)
Ardú i bhFéichiúnaithe		(54,438)	(2,786)
Glan-ardú i gCláir Thaighde agus Táillí		967,158	577,554
Dímheas	4	275,888	274,789
Aistriú Cúlchiste Caipitil	5	101,018	(108,247)
Caillteanas ar dhiúscairt		–	21,645
Glaninsreabhadh Airgead tirim ó ghníomhaíochtaí oibríochta		1,346,140	919,806
Ráiteas Sreabhadh Airgid			
Glaninsreabhadh airgid ó ghníomhaíochtaí oibríochta		1,346,140	919,806
Aischuir ar infheistíochtaí agus seirbhísiú airgeadais			
Ús Bainc Infhaighte	3	17,288	24,251
Caiteachas Caipitiúil			
Ceannach Sócmhainní Inláimhsithe	4	(376,906)	(188,187)
Ardú ar Airgead		**986,522**	**755,870**
Réiteach glaninsreabhadh airgead tirim chuig gluaiseacht i nglanchistí			
Ardú ar Airgead Tirim		986,522	755,870
Iarmhéid faoin 1 Eanáir		3,027,863	2,271,993
Iarmhéid faoin 31 Nollaig		**4,014,385**	**3,027,863**

Anailís ar athrú i nglanchistí (fiacha)

	Airgead infhaighte sa Bhanc €	Ró tharraingt €	Iomlán €
I dtús na bliana 2006	3,027,863	–	3,027,863
Sreabhadh Airgid	986,522	–	986,522
Ag deireadh na bliana 2006	**4,014,385**	**–**	**4,014,385**

Is cuid de na ráitis airgeadais seo é an Ráiteas Beartais Cuntasíochta agus nótaí 1 go dtí 13.

Dervilla Donnelly
Cathaoirleach – Comhairle na hInstitiúide

Tony Dorlas
Comhalta den Comhairle

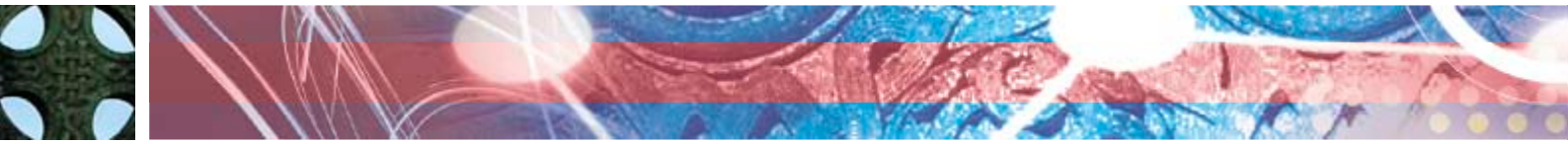
NÓTAÍ DO NA RÁITIS AIRGEADAIS

1 ANAILÍS SHONRAITHE D'IONCAM AGUS CAITEACHAS DON BHLIAIN DÁR CRÍOCH 31/12/2006

	Nótaí	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riarachán €	2006 Iomlán €	2005 Iomlán €
Ioncam							
Deontais Oireachtais		1,590,350	1,063,298	2,390,037	1,908,315	6,952,000	6,578,000
Glan-mhaoiniú iarchurtha do phinsin	10.b	(219,011)	(69,162)	(562,584)	2,282,053	1,431,296	1,143,157
Díolacháin Foilseachán		51,891	–	40	–	51,931	61,332
Ioncam Tionscadail	2	1,708	140,173	2,682,350	27,221	2,851,452	2,473,148
Ioncam Eile	3	–	269	500	19,300	20,069	54,773
		1,424,938	1,134,578	4,510,343	4,236,889	11,306,748	10,310,410
Aistriú (chuig) ó Chúlchiste Caipitil		–	–	–	(101,018)	(101,018)	108,247
		1,424,938	1,134,578	4,510,343	4,135,871	11,205,730	10,418,657
Caiteachas							
Costais Phárolla	7	1,301,352	867,830	1,761,373	674,543	4,605,098	4,289,522
Costais phinsin	10.c	(30,993)	(29,522)	(27,016)	2,324,578	2,237,047	1,886,059
Costais Tionscnamh	2	1,708	140,169	2,586,159	–	2,728,036	2,432,526
Stóráil Leabharlainne agus Leabhar		38,166	93,373	70,439	15,262	217,240	221,432
Dímheas	4	–	–	–	275,888	275,888	274,789
Cíos, Rátaí agus Árachas		–	–	–	113,526	113,526	120,551
Costais Ghinearálta	8	12,378	8,860	40,876	164,076	226,190	197,577
Costais Taistil agus Seimineáir		30,189	28,034	72,245	8,905	139,373	111,518
Cothabháil Áitribh agus Slándáil		497	–	7,183	143,308	150,988	206,990
Costais ríomhairí agus Idirlín		4,519	18,397	58,508	59,356	140,780	105,076
Breosla Solas agus Cumhacht		–	–	–	100,829	100,829	93,501
Post agus Teileafón		–	–	–	51,134	51,134	57,640
Páipéarachas		12,740	183	6,122	45,809	64,854	62,141
Foilseacháin		100,507	4,272	1,488	–	106,267	53,128
Fógraíocht		–	182	–	14,560	14,742	19,525
Mion Trealamh Oifige		1,602	2,190	7,786	5,590	17,168	22,307
Caillteanas ar dhiúscairt		–	–	–	–	–	21,645
		1,472,665	1,133,968	4,585,163	3,997,364	11,189,160	10,175,927

NÓTAÍ DO NA RÁITIS AIRGEADAIS

[AR LEAN]



1 ANAILÍS SHONRAITHE D'IONCAM AGUS CAITEACHAS DON BHLIAIN DÁR CRÍOCH 31/12/2006 [AR LEAN]

	Nótaí	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riarachán €	2006 Iomlán €	2005 Iomlán €
Barraíocht/(Easnamh) don bhliain		**(47,727)**	**610**	**(74,820)**	**138,507**	**16,570**	**242,730**
Iarmhéid amhail an 1 Eanáir roimh ath-leithdháileadh		463,881	141,874	305,073	(378,530)	532,298	289,568
Ath-leithdháileadh*		(173,492)	(38,763)	(493,832)	706,087	–	–
Iarmhéid amhail an 1 Eanáir tar éis ath-leithdháileadh		290,389	103,111	(188,759)	327,557	532,298	–
Iarmhéid amhail an 31 Nollaig roimh ath-leithdháileadh		416,154	142,484	230,253	(240,023)	548,868	532,298
Iarmhéid amhail an 31 Nollaig tar éis ath-leithdháileadh		**242,662**	**103,721**	**(263,579)**	**466,064**	**548,868**	**–**

** Nóta: I 2005, léiríodh glanchostas pinsean faoi riarachán. Tharla ath-leithdháileadh i 2006 chun glanchostas pinsean a léiriú de réir na scoileanna agus na rannóg.*

2 TIONSCADAIL

	2006 €	2005 €
Iarmhéideanna Tosaigh	2,261,064	1,683,510
Admhálacha	3,818,610	3,050,702
	6,079,674	4,734,212
Iarmhéideanna Deiridh	(3,228,222)	(2,261,064)
Curtha i bhfeidhm mar ioncam	2,851,452	2,473,148
Leithroinnt Ioncaim		
Scoil an Léinn Cheiltigh	1,708	3,982
Scoil na Fisice Teoiriciúla	140,173	118,164
Scoil na Fisice Cosmaí	2,682,350	2,310,380
	2,824,231	2,432,526
Riarachán	27,221	40,622
Ioncam Iomlán Thionscadal	2,851,452	2,473,148

2 TIONSCADAIL [AR LEAN]

Costais Tionscadal

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	2006 Iomlán €	2005 Iomlán €
Íocaíochtaí chuig Páirtithe/Comhlachais	–	1,340	1,726,805	1,728,145	1,510,809
Tuarastail/Scoláireachtaí	–	126,096	684,229	810,325	719,737
Taisteal	–	8,387	117,911	126,298	112,297
Eile	1,708	4,346	57,214	63,268	89,683
Iomlán	1,708	140,169	2,586,159	2,728,036	2,432,526

3 IONCAM EILE

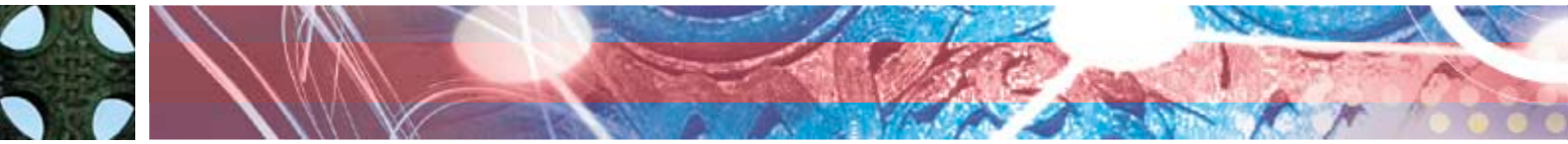
	2006 €	2005 €
Ús bainc	17,288	24,251
Táillí & deontais	500	561
Eile	2,281	29,961
Iomlán	20,069	54,773

4 SÓCMHAINNÍ SEASTA

	Troscán & Trealamh €	Mótar-fheithicilí €	Ríomhairí €	Iomlán €
Costais				
Iarmhéid Tosaigh 1/1/2006	1,906,818	50,235	1,097,454	3,054,507
Breiseanna	242,404	9,250	125,252	376,906
Riartha	–	(6,285)	(8,480)	(14,765)
	2,149,222	53,200	1,214,226	3,416,648
Dímheas				
Iarmhéid Tosaigh 1/1/2006	1,409,628	6,315	795,456	2,211,399
Muirear 2006	97,398	12,556	165,934	275,888
Riartha	–	(6,285)	(8,480)	(14,765)
	1,507,026	12,586	952,910	2,472,522
Luach glan de réir na leabhar 31/12/2006	642,196	40,614	261,316	944,126
Luach glan de réir na leabhar 31/12/2005	497,190	43,920	301,998	843,108

NÓTAÍ DO NA RÁITIS AIRGEADAIS

[AR LEAN]



5 CÚLCHISTE CAIPITIL

	2006 €	2005 €
Iarmhéid amhail an 1 Eanáir	843,108	951,355
Aistriú ó/(chuig) Cuntas Ioncaim agus Caiteachais		
Ioncam leithroinnte le sócmhainní seasta a fháil	376,906	188,187
Amúchadh ag teacht le dímheas sócmhainní	(275,888)	(274,789)
Méid scaoilte ar diúscairtí	–	(21,645)
	101,018	(108,247)
Iarmhéid amhail an 31 Nollaig	**944,126**	**843,108**

6 CREIDIÚNAITHE DLITE TAR ÉIS DHÁ MHÍ DHÉAG

	2006 €	2005 €
Comhdhéanta as:		
Vernam Hull Bequest	54,803	53,910
Carmody Fund	2,413	2,411
	57,216	**56,321**

Tá an t-airgead a bhaineann leo seo sealbhaithe mar éarlais. Níor baineadh úsáid as aon mhéideanna le linn na bliana.

7 COSTAIS PHÁROLLA

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2006 Iomlán €	2005 Iomlán €
Tuarastal/Pá	1,196,799	689,099	1,566,310	674,543	4,126,751	3,791,964
Scoláireachtaí	84,097	70,118	137,460	–	291,675	299,300
Cuairteoirí	19,056	107,613	57,603	–	184,272	191,925
Honoraria	1,400	1,000	–	–	2,400	6,333
	1,301,352	867,830	1,761,373	674,543	4,605,098	4,289,522

8 COSTAIS GHINEARÁLTA

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2006 Iomlán €	2005 Iomlán €
Ilghnéitheach	7,378	4,735	23,179	45,863	81,155	69,789
Tionscnaimh cur chun cinn/Lóin	4,701	4,125	9,274	2,825	20,925	28,855
Táillí Gairmiúla	–	–	–	79,851	79,851	39,235
Oiliúint	215	–	8,253	8,902	17,370	34,614
Táille Iniúchta	–	–	–	16,750	16,750	15,800
Muirir Bhainc	–	–	–	3,317	3,317	3,788
Sláinte & Sábháilteacht	84	–	170	6,568	6,822	5,496
	12,378	8,860	40,876	164,076	226,190	197,577

9 LÉASÁIL

Léasanna Oibríochta

Tá na háitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

Is é an tiomantas ar scór léasanna den sórt sin maidir le 2007 ná €55,519.

10 AOISLIÚNTAS

a) Scéim Phinsin

Feidhmíonn an Bord scéim aoisliúntais shochair shonraithe dá fhostaithe. Bunaíodh an luacháil a úsáideadh do FRS17 ar luacháil iomlán achtúireach atá tugtha cothrom le dáta go dtí an 31 Nollaig 2006 ag achtúire neamhspleách cáilithe chun ceanglais FRS17 a chur san áireamh chun dliteanais na scéime amhail an 31 Nollaig 2006 a mheasúnú.

Is mar seo a leanas a bhí na toimhdí airgeadais a úsáideadh chun chomhchodanna an chostais shochair shonraithe a ríomh don bhliain dar chríoch an 31 Nollaig 2006:

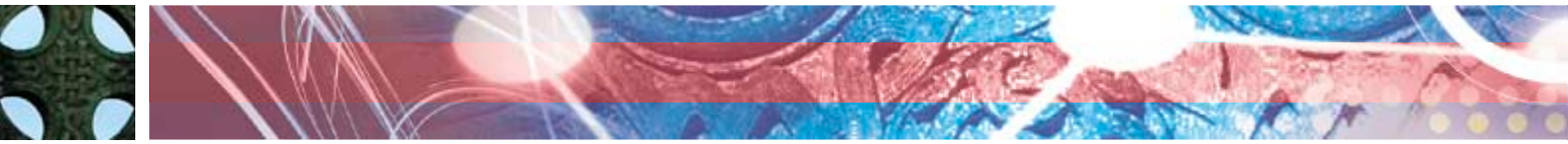
	Ar 31/12/06	Ar 31/12/05	Ar 31/12/04
Ráta Lacaine	4.60%	4.70%	5.25%
Ráta Boilscithe	2.25%	2.25%	2.25%
Ráta na nArduithe Tuarastail	4.00%	4.00%	4.00%
Ráta na nArduithe Pinsin	4.00%	4.00%	4.00%

b) Glan-Mhaoiniú Iarchurtha do Phinsin sa bhliain

	2006 €'000	2005 €'000
Maoiniú inaisghabhála i ndáil le costais phinsin na bliana reatha	2,340	1,975
Deontas Stáit feidhmithe chun pinsinéirí a íoc	(909)	(832)
	1,431	1,143

NÓTAÍ DO NA RÁITIS AIRGEADAIS

[AR LEAN]



10 AOISLIÚNTAS [AR LEAN]

c) Anailís ar na costais iomlána pinsin curtha chun dochair do Chaiteachas

	2006 €'000	2005 €'000
Costas seirbhíse reatha	1,071	780
Ús ar Dhliteanais na Scéime Pinsin	1,269	1,195
Ranníocaíochtaí Fostaí	(103)	(89)
	2,237	1,886

d) Sócmhainn Mhaoinithe Iarchurtha do Phinsin

Aithníonn DIAS na méideanna seo mar shócmhainn a chomhfhreagraíonn don dliteanas iarchurtha neamh-mhaoinithe do phinsin bunaithe ar ar roinnt imeachtaí a tharla cheana. Áirítear ar na himeachtaí seo an bonn reachtúil chun scéim aoisliúntais a bhunú, agus an polasaí agus an cleachtas i ndáil le pinsin seirbhíse poiblí a mhaoiniú, lena n-áirítear ranníocaíochtaí ag fostóirí agus próiseas na meastachán bliantúil. Cé nach bhfuil aon socrú foirmiúil maidir leis na méideanna sonracha seo déanta leis an Roinn Oideachais agus Eolaíochta, níl aon fhianaise ag DIAS nach leanfaidh an polasaí maoinithe seo de bheith ag freastal ar an méid seo de réir an chleachtais reatha.

Ba í €33 milliún (2005: €31 milliún) an tsócmhainn mhaoinithe iarchurtha do phinsin amhail an 31 Nollaig 2006.

e) Gluaiseacht i nGlan-Dliteanas Pinsin i rith na bliana airgeadais

	2006 €'000	2005 €'000
Glan-Dliteanas Pinsin amhail an 1 Eanáir	(30,868)	(25,072)
An Costas Seirbhíse Reatha	(1,071)	(780)
Costais Úis	(1,269)	(1,195)
Gnóthachan achtúireach	(666)	(4,653)
Pinsin íoctha sa bhliain	910	832
Glan-Dliteanas Pinsin amhail an 31 Nollaig	(32,964)	(30,868)

f) Stair na ngnóthachan agus na gcaillteanas iarbhír

	2006 €'000	2005 €'000	2004 €'000
(Gnóthachain)/caillteanais iarbhíre ar dhliteanais na scéime.	(3,627)	830	975
Céatadán de luach reatha dhliteanais na scéime	(11.00%)	2.69%	3.89%
Méid Iomlán aitheanta i Ráiteas d'iomlán na ngnóthachan agus na gcaillteanas aitheanta	666	4,653	1,199
Céatadán de luach reatha dhliteanais na scéime	2.02%	15.07%	4.78%

11 NOCHTADH IDIRBHEARTAÍOCHTAÍ

Glacann Comhairle na hInstitiúide le nósanna imeachta de réir threoirlínte atá eisithe ag an Roinn Airgeadais maidir le leasanna a nochtaíonn Comhaltaí na Comhairle agus chloígh Comhaltaí na Comhairle leis na nósanna imeachta sin le linn na bliana. Níor léirigh aon Chomhalta de chuid na Comhairle leas.

12 DLITEANAIS TEAGMHASACHA

Thionscain an tIar-Chláraitheoir imeachtaí dlí in aghaidh na hInstitiúide. Ní féidir toradh imeachtaí den sórt sin a thuar ná a dtionchar airgeadais, más ann.

13 CEADÚ CUNTAIS

Cheadaigh an Chomhairle na Ráitis Airgeadais ar an 29 Marta 2007.

TUARASCÁIL AN ARD-REACHTAIRE CUNTAS AGUS CISTE

le cur i láthair Thithe an Oireachtais

Tá ráitis airgeadais Institiúid Ard-Léinn Bhaile Átha Cliath don bhliain dar críoch 31 Nollaig 2006 iniúchta agam faoin Acht Um Institiúid Ard-Léinn, 1940.

Tá na ráitis airgeadais, a ullmhaíodh faoi na beartais chuntasaíochta arna leagan amach sna ráitis, comhdhéanta de na Beartais Chuntasaíochta, an Cuntas Ioncaim agus Caiteachais, an Clár Comhardaithe, an Ráiteas ar Shreabhadh Airgid, Ráiteas Gnóthachan agus Caillteanas Aitheanta Iomlán agus na nótaí gaolmhara.

Freagrachtaí na Comhairle agus an Ard-Reachtaire Cuntas agus Ciste faoi seach

Tá an Chomhairle freagrach as na ráitis airgeadais a ullmhú de réir an Achta Um Institiúid Ard-Léinn, 1940, agus as rialtacht na n-idirbheart a chinntiú. Ullmhaíonn an Chomhairle na ráitis airgeadais de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn. Tá freagrachtaí cuntasaíochta Chomhaltaí na Comhairle leagtha amach sa Ráiteas um Fhreagrachtaí na Comhairle.

Is é m'fhreagrachtsa ná na ráitis airgeadais a iniúchadh de réir cheanglas ábhartha dlí agus rialúcháin agus Caighdeán Idirnáisiúnta maidir le hIniúchóireacht (Ríocht Aontaithe agus Éire).

Tuairiscím mo thuairim maidir le cibé an dtugann na ráitis airgeadais léargas fíorcheart, de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn. Tuairiscím freisin cibé, dar liom, an raibh leabhair chuntais chuí coinnithe. Lena chois sin, deirim cibé an dtagann na ráitis airgeadais leis na leabhair chuntais.

Tuairiscím ar aon chás ábhartha nár feidhmíodh suimeanna airgid chun na gcríoch a bhí beartaithe nó sa chás nach leanann na hidirbhearta do na húdaráis a rialaíonn iad.

Tuairiscím freisin mura bhfuil an fhaisnéis agus na mínithe ar fad faighte agam agus atá riachtanach chun críocha m'iniúchta.

Scrúdaím an Ráiteas maidir le Rialú Inmheánach Airgeadais le féachaint an léirítear ann gur chomhlíon an Institiúid an Cód Cleachtais maidir le Rialachas Comhlachtaí Stáit agus tuairiscím ar aon chás ábhartha nach ndéanann sé amhlaidh, nó más rud é go bhfuil an ráiteas míthreorach nó nach dtagann sé le faisnéis eile atá ar eolas agam de bharr na ráitis airgeadais a bheith iniúchta agam. Ní cheanglaítear orm a bhreithniú cibé an gclúdaíonn an Ráiteas maidir le Rialú Inmheánach Airgeadais gach priacal agus rialú airgeadais, ná teacht ar thuairim maidir le héifeachtacht na nósanna imeachta maidir le priacail agus rialú.

An Bunús atá le mo Thuairim ar na Ráitis

I mbun m'fheidhme mar Ard-Reachtaire Cuntas agus Ciste, rinne mé m'iniúchadh ar na ráitis airgeadais de réir Caighdeán Idirnáisiúnta maidir le hIniúchóireacht (Ríocht Aontaithe agus Éire) arna n-eisiúint ag an mBord um Chleachtais Iniúchóireachta agus trí thagairt a dhéanamh do na nithe ar leith is gá a chur san áireamh i ndáil le cúrsaí bainisteoireachta agus oibriúcháin a ghabhann le comhlachtaí Stáit. Déantar scrudú mar chuid den iniúchadh, ar bhonn tástála, ar fhianaise a bhaineann le suimeanna agus rialtacht na n-idirbheart airgeadais a chuirtear san áireamh sna ráitis airgeadais, agus leis na hidirbhearta a fhoilsítear iontu. Chomh maith leis sin, cuimsíonn an t-iniúchadh measúnacht ar na meastacháin agus ar na breitheanna suntasacha a rinneadh agus na ráitis airgeadais á n-ullmhú, agus measúnacht le féachaint an n-oireann na beartais chuntasaíochta don bhail atá ar chúrsaí na hInstitiúide, ar feidhmíodh na beartais sin ar bhealach leanúnach agus ar foilsíodh iad ar bhealach sásúil.

Phleanáil mé agus rinne mé m'iniúchadh sa chaoi is go bhfaighinn an fhaisnéis agus na mínithe ar fad a mheas mé a bheith riachtanach ionas go mbeadh leordhóthain fianaise agam a d'fhágfadh cinnteacht réasúnach ann go bhfuil na ráitis airgeadais saor ó mhíráiteas ábhartha, cibé acu calaois nó neamhrialtacht eile nó earráid is cúis leis sin. I dteacht ar mo thuairim, rinne mé meastóireacht ar a shásúla is a cuireadh faisnéis i láthair sna ráitis airgeadais san iomlán freisin.

Tuairim

Is é mo thuairim go dtugann na ráitis airgeadais léargas fíorcheart, de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn, ar riocht ghnóthaí na hInstitiúide ag 31 Nollaig 2006 agus ar a hioncam agus ar a caiteachas don bhliain dar críoch sin.

Is é mo thuairim go raibh leabhair chuntais chuí coinnithe ag an Institiúid. Tá na ráitis airgeadais ag teacht leis na leabhair chuntais.

Gerard Smyth
Le haghaidh agus thar ceann an Ard-Reachtaire Cuntas agus Ciste

11 Aibreán 2007

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